Transdisciplinary Curriculum

A general proposal for a class for Ph.D. students
1. **Introduction to transdisciplinarity**

2. **Project management**
   a. Discuss meeting schedules, format, and rules
   b. Analyze and contrast leadership and committee structures for optimal results

3. **Project definition**
   a. Define study boundaries appropriate to all disciplines
   b. Define conflicts of interest
   c. Define methods to coordinate research

4. **Project Operations**
   a. Address areas of uncertainty
   b. Discuss disciplinary methodologies and research impact
   c. Analyze roles of stakeholders and researchers and methods to incorporate stakeholders into research process

5. **Project Results**
   a. Discuss methods to use knowledge produced during research to further the project
   b. Identify steps and actions necessary to implement proposed solutions
SWAN Student Workshop

Feb. 14th & 15th 2016
Biosphere 2

Tamee Albrecht - UA - Geography
Furrukh Bashir - UA - Hydrometeorology
Eliza Benites - UMI/UA/Paris 3 - Sociology
Claire Beveridge - UW - Environmental engineering
Kremena Boyanova - NIGGG-BAS - Ecosystem services
Violeta Caballo - Seville - Water governance & SES
Jampell Dell’Angelo - SESYNC - Water governance
Chloé Fandel - UA - Hydrology
Christopher Fullerton - UA - Geography
Susan Harris - UA - Hydrology
Nuria Hernandez-Mora - Seville - Water governance & SES

Jacob Hileman - UC Davis - Environmental policy
Lily House-Peters - UA - Geography
Owen King - UWE - Political ecology
Kristin Kuhn - UNESCO-IHE - Ecohydrology
Claude LeGouill - UMI - Sociology
Brian O’Neill - UA - Sociology
Tanya Trenkova - NIGGG-BAS - Web GIS
Rositsa Yaneva - NIGGG-BAS - Ecosystem services
Zhao Yang - UA - Atmospheric sciences
Petar Yordanov Nikolov - U of Sofia - GIS
Focus on Discrete Topics

Professor Victor Baker

Zak Royse
◆ Physical sciences

Key terms and processes
Labs to expand understanding
Explanation of the key processes and interconnections - cause-effect interactions
Uncertainties of parameters
How models work (climate/hydrological models)?
Time-space variability
Issue of scale in defining research projects
Social Sciences

Political ecology
Socio-ecological systems
The perception that nature is not independent of human influences
The study object is where the power is focused – institutions, agencies
How they influence the landscape?
Geographical/landscape approach
Issue of scale in defining research project
Projects - Case Studies

1. Use of Case Studies in Class
   To highlight areas of difficulties, begin the class with a study of case studies where transdisciplinary research has been attempted but effort failed.

2. Subsequent use of case study alternatives:
   Developed by the professor and present to the class
   Have the class develop during the class based on background and interests
Curriculum Ideas

GOAL:
Teach students to have a transdisciplinary mindset

INTRODUCTION:
- Litany of failures
- Philosophy of science
  - role of uncertainty & subjectivity
- What is transdisciplinarity?

PROJECT:
- Professor maintains a list of potential stakeholder contacts
- Students choose research questions & tackle them as a group

DISSEMINATION:
- Strategies for education & communication

TRANSDISCIPLINARITY:
- Theory & methods of social-ecological systems

DISCIPLINARY FOUNDATIONS:
- Student-led labs & field trips in their area of expertise
- Invited guest speakers

1 semester (~15 weeks)
~20 PhD students
Reflections

- Being physically in the same place is very valuable. Teleconferencing is challenging.
  - But, many teleconference discussions were still fruitful, especially sharing experiences.
- Disciplinary language barriers also make collaboration more difficult.
- There is a trend of directionality - physical scientists often seek out collaboration with social scientists, but not vice-versa.
  - Results in a physical science framework driving transdisciplinary work
  - What do social scientists gain from transdisciplinary work?
- There are both strengths and limitations that come with each person’s training.
- The fundamental debate is about where knowledge resides.