



Employing Model-Based Reasoning in Socio-Environmental Synthesis

Dear Doctoral student,

You are invited to apply for a new summer training workshop to be held July 11-29, 2016 at the [University of Texas at El Paso](#). The National Science Foundation-funded [EMBeRS project](#) will host ten PhD students from diverse disciplines to participate in two weeks of specialized training on conducting interdisciplinary research in teams. Selected students will gain the knowledge, skills, and attitudes necessary to become the future leaders of interdisciplinary research teams. Teamwork concepts introduced will be made more concrete through simulating interdisciplinary teamwork around water-related topics. This training will strengthen your professional development and position you for success in interdisciplinary research.

The National Research Council (2015) report on [Enhancing the Effectiveness of Team Science](#) identified seven characteristics of team science research that are benefits, but which entail unique challenges: high diversity; deep knowledge integration; large team size; goal misalignment; permeable boundaries; geographic dispersion; and high task interdependence. The workshop will introduce students to recent research findings on interdisciplinary teamwork relevant to overcoming these challenges, explore the implications of these for leading interdisciplinary teams, and provide hands-on experience working across disciplines using activities designed to overcome common barriers to integrative research and decision-making. Local field trips will highlight features unique to this water-stressed region. Participants will also have the opportunity to visit Carlsbad Caverns National Park.

PhD students from any science, technology, engineering, or math (STEM) discipline are invited to apply. Applications are due March 31, 2016. Selections will be made by April 15. All travel, housing, and meal expenses will be covered by the grant.

More information and application instructions are available [here](#):
<http://embers.cybershare.utep.edu/summerwksp.html>.

Thank you for your interest, and hope to see you this summer!

Regards,

Dr. Deana Pennington, Principal Investigator
Associate Professor of Geological Sciences
University of Texas at El Paso
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EMBeRS 2016 Schedule

All activities follow the EMBeRS model: individual external representation, sharing, co-creation of an external representation, reflection, iteration

Presenter is Pennington unless otherwise noted

| Day | Topic | Presenters |
|--|--|------------|
| | Read for day 1: Pennington et al. (2016); Gosselin et al. (2016) | |
| Day 1 Knowledge is messy -- integrating messy knowledge is hard | | |
| | Introductions | |
| | Concept map your research | |
| | Pizza lunch: Challenges of interdisciplinary work | |
| | Mock Solicitation – similar disciplines | |
| | Read for day 2: O'Rourke & Crawley (2013); Eigenbrode et al. (2017) | |
| Day 2 Beneath the tip of the iceberg | | |
| | Toolbox project activity | Vasko (VC) |
| | Trimetrix activities | Gosselin |
| | Prep for day 3: Mx City case study docs; find an article | |
| Day 3 Problem framing: Mexico City case study part 1 | | |
| | Teamwork basics | |
| | Activity: Issue map | |
| | Read for day 4: None! | |
| Day 4 Systems modeling: Mexico City case study part 2 | | |
| | Systems thinking & modeling Danielson presentation 9 am? | |
| | Guest speaker: Ali Mirchi | |
| | Read for day 5: Clark et al (2016) | |
| Day 5: Stakeholders: Mexico City case study part 3 | | |
| | Activity: Actors & stakeholders | Gosselin |
| | Modeling and online games with stakeholders | Thompson |
| | Activity: Actors & stakeholders | Thompson |
| | Working with stakeholders - Guest speakers: Heyman & Hargrove | |
| | Read for day 6: Bosque-Pérez et al (2016) | |
| Day 6 TBD in first session | | |
| | EMBeRS goals and objectives Designing activities Online team science resources | |
| | Work in groups designing activities | |
| | Lead your activity with everyone | |

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| | Read for day 7: Palmer et al (2016); SESYNC solicitations; example projects; example papers | |
| Day 7 SESYNC proposal | | |
| | Review SESYNC solicitations, target journals, planning work; target products of interest | |
| | Guest: Jon Kramer – Director of Science at SESYNC – Graduate proposals | |
| | Work in self-selected groups on products | |
| | Report out and plan next steps | |
| | Read for day 8: | |
| Day 8 Science design: A picture's worth... | | |
| | Designing for learning | Gouvea |
| | Collectively discuss and select 3-4 target workshops | |
| | Self-select into groups; design and develop workshops | |
| | Read for day 9: Wiek et al. 2011, Phelan et al. 2015 and Wiek et al, 2016 | |
| Day 9 The good, the bad, the ugly: Environmental Science Graduate Education | | |
| | Discussion: What would make the perfect program? | Vincent & Parnell |
| | Interviews | |
| | Field trip – desalinization plant | |
| | Pilot workshops | |
| Day 10 Now you do it | | |
| | Interviews | |
| | Work on proposal/paper Reflective writing on workshop | |
| | Catered lunch | |
| | Final debrief | |
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