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Overview of the NSF Workshop on Complex Interacting Systems for a Sustainable Future.

The workshop was held at the Sand Key Beach Sheraton Hotel, Clearwater Beach, Florida over two days, June 7th and 8th 2007. The NSF sponsored event was coordinated by the Conference Department of the University of Florida and facilitated by USF's Associate Provost & Dean of Graduate Studies, Dr. Delcie Durham. The workshop's list of participants comprised thirty eight (38) faculty (from some 18 US tertiary institutions), industrial personnel and representatives from governmental agencies. Both Dr. Daniel Yeh and Dr. Maya Trotz of USF's Department of Civil and Environmental Engineering were participants at the event.

On June 7th, after all the formalities were taken care of, plenary presentations were given by Dr. Julio Ottino on *Complex Systems* followed by one entitled *Complexity, Sustainability, and the Anthropogenic Earth* by Dr. Brad Allenby. These talks aided in raising the awareness of what complex systems are and the difficulties that exist in modeling such systems and thus served as a great interjection of knowledge to stimulate thought amongst participants as they immediately forged into the first breakout session.

From the onset of the first breakout session it was made clear by Dr. Durham that the main objective of the workshop was to generate a report for the NSF to use as a guide on sustainability issues inclusive of research needs/gaps, curriculum development for sustainability education as well as envisioned outcomes. To attempt to attain this ultimate goal the invited participants were divided initially into six (6) groups, each with a designated topic and leader. The topics for the six (6) groups were *Sustainable Systems Integration and Analysis* led by Dr. Julio Ottino; *Sustainable Energy Resources* led by Dr. Vincent C. Tidwell; *Water Quality and Allocation* led by Dr. Wendell Ela; *Environmental Preservation* led by Dr. David Allen; *Materials Assurance* led by Dr. Mike Overcash; and *Human Resources and Social Factors* led by Dr. Cliff I. Davison. Graduate student scribes from UF, CMU, Arizona State, and USF assisted each table. USF students from Dr. Yeh and Dr.Trotz research group were Anna Prieto, Russell Ferlita, and Ken Thomas. Over the course of both days there were four (4) breakout sessions where all participants, except the group leaders, were interchanged among the groups according to a pre-arranged roster. This arrangement allowed for the transfer of knowledge amongst groups and thus aided in summarizing the key interdependencies and similarities of the groups, an area that was itemized by the NSF as important for the report. The findings of each breakout session were summarized and presented by the group leaders during their allocated times. This allowed all participants to both learn as

the workshop progressed but more importantly this method of information dissemination served to continuously stimulate to think and formulate ideas as they progressed from breakout session to breakout session.

On both days the allocated lunch sessions were facilitated with spirited presentations from NSF Directors Dr. Cindy Lee and Dr. William Schultz as well as USEPA's Dr. Suhas Sikdar and Dr. Heriberto Cabezas. Dr. Shultz spoke about the NSF RESIN (Resilient and Sustainable Infrastructures) program. More information on this million dollar grant that requires at least 1 PI be from the Social Sciences can be found here: http://www3.abe.iastate.edu/biobased/RESIN.htm.

At the end of the fourth breakout session on June 8th the workshop culminated with the six group leaders meeting to do a draft of the report to be submitted to the NSF. Some of the major findings as pertain to education, to be included in the report, include the need for interdisciplinary teaching on the issue of sustainability; support of student organizations (such as Engineers Without Borders and Engineers for a Sustainable World) to raise awareness on sustainability issues; as well as the use of campus developments as a living laboratory/complex system that can be incorporated into courses and projects.