



# Professional Development Programs for the Marine, Earth, and Environmental Scientists

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# Major Themes

- Age and Level Appropriate Topics
- Student Driven
- Discussion/Question Format
  - Better learning outcomes
  - Fosters future discussion
    - With mentors, advisors, and student colleagues
- Multiple Approaches
  - Facts, Stories, Examples

# UD Programs



- High School
  - Campus tours
  - Field Experiences (UD Tide Camp)
  - Meet and Question Researchers
- College (Starting 2<sup>nd</sup> year, ideally)
  - Responsible Conduct of Research (Introductory)
  - Research Experiences for Undergraduates
  - Career Planning (Think about future now!)
  - Career Preparation (Course/Experience Selection!)
  - Professional vs Research Graduate Programs
  - Writing and Public Speaking
  - Broaden Scientific, Mathematics, Engineering Background



# UD Programs

- Graduate School
  - Career Planning
    - Meet Scientists from outside academics
    - Responsible Conduct of Research Training (Advanced)
    - Career and Life Balance
    - Two Career Issues
    - Career Management
  - Networking/Outreach
    - Attend Meetings (not only scientific)
    - Involvement in Outreach

# CEOE Professionalism 2011



Dr. William Ullman, UD SMSP	<b>Trust, Honor, Integrity, and Proper Conduct of Research</b>
Drs. David Kirchman and William Ullman, UD SMSP	<b>Authorship and Ownership: Who owns your ideas?</b>
Dr. Sean Hayes, UD Office of Research	<b>Copyright and Patent Law</b>
Ms. Joyce Henderson, UD Career Services	<b>Résumé Writing</b>
Dr. William Ullman, UD SMSP	<b>Building your Professional Network of Colleagues</b>
Dr. Maria Honeycutt, NOAA Coastal Services Center	<b>A Career in Government Service</b>
Mr. Chris Petrone, Delaware Sea Grant Marine Advisory Service	<b>Preparing for a Career in Public Outreach, Extension, and Secondary Education</b>
Dr. Jeffrey Wakefield, Cardno/ENTRIX	<b>Preparing for a Career in Environmental Consulting</b>
Meredith Chapman, UD Office of Communications and Marketing	<b>Communicating Science.</b>
Dr. Jinglan Wu, DuPont de Nemours	<b>From Plants to Plant</b>

# REU Workshops and Seminars 2012



Topic	Speaker(s)	Topic	Speaker(s)
Orientation ( <i>overview of the program, computer facilities, library, safety issues</i> )	J. Lopez/J. Scudlark/A. Dittel	Honor, Integrity, and Responsible Conduct of Research	B. Ullman
Luncheon with graduate students		Small boat course practical	
From Krogh to Krill: spectral tuning in crustacean eyes	J. Cohen	After BS/BA, What next?	B. Ullman
Marsh walk	D. Miller/ A. Dittel	Horseshoe crab count	D. Miller/ A. Dittel
Intern proposed research presentations		Life Under Antarctic Ice	A. Marsh
Communicating Results from Scientific Research. Part I	D. Kirchman	Communicating Results from Scientific Research. Part II	D. Kirchman
Conversations at the edge of the sea: the voice of halophytes	J. Gallagher	Fieldtrip to Cape Henlopen environments	E. Maurmeyer /A.Dittel
Deep ocean fixing of carbon during the process of chemosynthesis	G. Luther	Air-Sea Interactions: Connecting the Ocean and the Atmosphere	F. Veron
Day boat trip	A. Dittel	Intern Final Presentations	



# Responsibility and Integrity in Science and Engineering: UD Center for Science, Ethics and Public Policy

- Ethical and Policy Issues in Science and Engineering
- Responsible Conduct of Research and other ethical issues in professional practice
- Teaching future academics to teach and to critically evaluate ethical conflicts in professional and academic practice
- Case study methodology

# My Continuing Questions



- What are the contrasting professional development needs of upper-level undergraduates, terminal MS students, PhD students (with and without academic aspirations), post-docs, and young professors?
- How can we train future professionals to be better mentors of their future colleagues and subordinates
- Do we really know that professional development programs for students are useful to the students?





# Questions?