UT Marine Geology and Geophysics Field Course

Dr. Sean Gulick, Research Professor
UT Austin
Mixed field and lab, hands-on, group based, mixed grad-undergrad immersive learning linked with research program

Also funded externally-

Sponsors (also invited to student presentation day)

- Austin Pixel Press
- Chevron Corporation
- ConocoPhillips Company
- ExxonMobil Corporation
- Marathon Oil Corporation
- Arthur E. Maxwell Graduate Fellowship in Geophysics
- The Scott Petty Foundation
- SEG Foundation
- Statoil
- Total S.A.
- Quarles van Ufford UTIG Field Endowment
MG&G Field Course Structure

**Phase 1**
- Classroom lectures on the theoretical basis for research methodologies
- Labs on methods for seismic and geological data collection and seismic software processing packages

**Phase 2**
- One full week of field work in the Gulf of Mexico and continental shelf
- Use a large hired research vessel and smaller UT-owned coastal vessel.
- Each day one team remains in the shore lab to process data

**Phase 3**
- Team-based data analysis and interpretation
- Additional lectures on data analysis, interpretation, and visualization take place
- Capstone Group Presentations
Phase 1 Examples
Phase 2: Field
Phase 3: Interpretation Week
Testimonials

“The Marine Geology and Geophysics field course was by far the greatest learning experience in all my years at the Jackson School!...”

"As a course, I believe that the Marine Field course is an invaluable component in the curriculum of a marine geologist. The professors and research scientists from UTIG are all very knowledgeable, yet personable, allowing for a learning experience not like anything found in all classroom environments.”

“There is no other course that offers students hands-on experiences in all aspects of conducting a marine geophysics survey...”

“More science classes should be taught this way! I learned more on those two weeks than I would have in two years of classroom learning. It not only teaches you geophysical skills, but teaches you about life at sea, which is equally as invaluable. This course will definitely determine whether this is a path a student wants to pursue.”

“The MG&G field course is easily the most valuable and unique educational experience I have ever had...”

http://www-udc.ig.utexas.edu/external/MGGFieldCourse/
Deep physicalist John Olf has studied some of the slim barrier islands running parallel to the Texas coast — including Galveston Island. He said those islands were badly damaged in September of 2008 by Hurricane Ike, which made landfall near the city of Galveston.

John Olf: There was a tremendous loss of sand, and sand is the critical component to maintaining the health of the system.

Olf mapped the seafloor before barrier islands, before and after Hurricane Ike. He said the most erosion occurred when the hurricane subsided, as water rushed out of an overflowing Galveston Bay, back into the Gulf of Mexico.

John Olf: The back surge is very important. That, we found, was a very, very strong force. It moved a lot of sediment, and eroded a lot of the sand. Those areas are critical to maintaining the beach barrier system. And without it, once you lose it, it's very hard to get it back.

That's why. Olf said, his research could be helpful for cities like Galveston — places where hurricanes are likely. Galveston sits on a barrier island. Hurricane Ike sent a storm surge over the city that reached 28 feet — over six stories — in some places, before rushing back into the Gulf of Mexico. Olf said it's possible to replenish Galveston Island's lost sand. But, he said, it's expensive.

To date, the city still has not fully recovered, and part of its human population has not returned.
Elements that make it successful but are also challenges relative to “normal” academic calendars and teaching traditions

• Immersive 3 week course (professors and students do nothing else)
• Teams of graduates and undergraduates crossing disciplines
• High teacher student ratio with technicians as TAs
• Expensive but can be supported externally
• Research link- creates baseline and repeat measurements and feeds student undergrad theses

Questions? Thoughts?