

The Deep Ocean EAS 4801

August 19 – September 20 2019, TU-TH 3:00-4:15pm
ES&T room L1116

Lead Instructor:

Dr. Annalisa Bracco

ES&T 2248; Phone: 404-894-9472

abracco@gatech.edu

with guest lectures by Dr. J. Montoya (BIOL) and TBC S. Joye, UGA; S. Herrera, LeHigh Un.; Andrea Quattrini, Harvey Mudd College

Course overview

“More than eighty percent of our ocean is unmapped, unobserved, and unexplored. Much remains to be learned from exploring the mysteries of the deep.” Jul 11, 2018, Ocean Service, NOAA (National Oceanic and Atmospheric Administration)

A **Mini-Mester Course** for undergraduate students interested in learning about challenges and opportunities in the mostly unexplored world that occupies 95% of our planet living space. We will dig into physical, biological and chemical discoveries as well as research, tools and technologies that are helping us exploring this frontier.

Pre-requisite: None. Oceanography (EAS 4300) is useful but not mandatory.

Outline

Week 1: Deep ocean circulation and climate variability: An Introduction. What we know, what we do not know, why it is important. Ocean drilling and paleo oceanography.

Week 2: Technologies for exploring the deep ocean, from the poles to the equator. The old, the new, the future.

Week 3: The mysterious world around hydrothermal vents. The life-in-other-planets analog.

Week 4: Biodiversity in the deep ocean. From the poles to the equator the adaptation strategies developed to live in the cold, high pressure and dark environment of the deep ocean are a celebration of evolution.

Week 5: The Gulf of Mexico: putting it all together, the tech, the physics, the chemistry and the biology.

During this course we will also have the opportunity to watch relevant episodes from the BBC documentary Blue Planet II

Course evaluation

Attendance and active participation in class: 50%

Group project: 50%