**SEA Miami Course Syllabus**

**Dates: Jan 10 – Jan 20 2017**

MBI350 (3 credits) SEA Miami I: Ocean Sciences

MBI399 (3 credits) SEA Miami II: Nautical Training

**Course Description:**

Learn the fundamentals of sailing ship operation, navigation, weather, engineering systems, and safety by participating as an active member of the ship’s crew. Design and conduct oceanographic research. Participate in oceanographic sampling methods and shipboard laboratory operations to gain experience in deployment of modern oceanographic equipment and collection of scientific data at sea.

**Instructor(s):** Rachael Morgan-Kiss (Microbiology); Sea Education Association (SEA) Oceanographer/Chief Scientist and Nautical Science Faculty/Captain

**Location:** At sea in the Caribbean aboard the SEA Semester sailing school vessel, the SSV *Corwith Cramer*

**Prerequisites:** Admission to SEA Miami Program

**Course Philosophy and Approach:**

The SEA Miami course is an intensive field seminar program during which students will voyage on the open ocean for 10 days aboard SEA’s 134-foot brigantine, a research vessel which operates under sail. The overall goals of the course are to provide students with a practical hands-on introduction to conducting oceanographic research and to working together as a team to sail a tall ship. At sea, students will learn by doing, participating as active crew members throughout the entire voyage. Working under the guidance of the vessel’s professional staff, they will stand watch on deck, learning and applying key seamanship skills critical to a ship’s operations. Students will also design and conduct oceanographic research projects under the guidance of the Miami Instructor and the Chief Scientist aboard the vessel. The range of possible research topics that can be addressed is broad, encompassing the sub-disciplines of biological, chemical, physical, and geological oceanography, to together provide a multidisciplinary look at the Caribbean environment in which we will sail. While standing watch in the lab, students will operate standard oceanographic equipment and employ recognized methodologies involved in the collection, reduction, and analysis of oceanographic data. Students will collaborate in interpreting scientific data and will prepare scientific reports summarizing their research findings and conclusions. The course will also include a maritime history and culture component; we will use the port from which we sail and possibly an additional island stop as case study locations for considering the impact of seafaring on coastal and island people.

**Learning Outcomes:**

The students will be able to …..

1. Function as an effective crew member on deck and in lab through demonstrated proficiency in shipboard skills.
2. Safely operate standard oceanographic equipment including: hydrographic winch, Conductivity Temperature and Depth (CTD) probes, 12-Niskin bottle rosette water sampler, in situ Seapoint fluorometers to measure chlorophyll-a concentration in seawater, surface and subsurface nets for zooplankton sampling.
3. Recognize the importance of and practice of accurate data recording.
4. Analyze and interpret oceanographic data in real time.
5. Participate and contribute as an essential member of a research team.
6. Collect and preserve samples for microbiological analyses.
7. Proficiently use a microscope to identify and enumerate marine photosynthetic microorganisms.
8. Evaluate, clarify and/or frame a complex question or challenge, using perspectives and scholarship drawn from environmental microbiology.
9. Construct a summative project or paper that draws on current research, scholarship and/or techniques in microbiology.

**Evaluation**

Daily Reports

On-Watch Evaluation

Lab/Field Notebook

Presentation of Data/Research Project