

A sample itinerary for the STARS program

*Note: No previous experience is required to participate in this program!

Day before cruise:

9:00-12:00 Transport supplies to ship and set-up lab. If you are available and would like to help with this, please let us know.

Day 1:

7:30-8:00 Arrive at ship
8:00-9:00 Tour of the ship, get linens etc., settle in
9:00-9:45 Depart SNUG, group introductions, on-deck photo opportunities, look for the dolphins
9:45-10:45 Science meeting, safety briefing with Captain, muster in staging area with life jacket & survival suits, learn where rafts are located, try on survival suits
10:45-11:15 Go over itinerary for the trip
11:15-12:00 Lunch
12:00-12:30 General overview of science on the ship & deck operations
12:30-13:00 Learn about the CTD and prepare bottles for deployment
13:00-13:30 Observe CTD deployment, discuss real-time CTD profiles on screen
13:30-14:00 Learn about a Niskin bottle for water collection, practice with the messenger, get line ready to use on the Capstan, prep Niskin for deployment.
14:00-14:30 Go on aft deck and wait for Niskin deployment. Learn how to operate the Capstan and learn hand signals to communicate with OTG on aft deck. Everyone will have a role in the deployment, and we will rotate through the positions during the cruise. All personnel must wear safety gear.
14:30-15:00 Deployment of Niskin to 20m will be conducted by Teachers for size fractionation experiment.
15:00-17:00 Learn about water budget, observe sample collection from the CTD, and learn about why people collect these samples. After everyone has their water, we'll collect water for testing with Vernier probes.
Lab: Learn how to use filtration apparatus using Niskin sample, learn about chlorophyll extractions, store extracted chlorophyll samples in freezer, and measure properties of CTD water samples with Vernier probes.
17:15-18:15 Dinner
18:00-19:00 Break for sunset. Free time.
19:00-20:30 Lecture on the HOT program & station ALOHA. Analysis of CTD profiles with worksheet to learn about the key features/general properties of the ocean (this is an activity that can be used in the classroom with students).
20:30-22:00 Watch Discovery Project Earth – Hungry Oceans. Discussion.
22:00-23:00 Break. Free time. Meet the scientists.
23:00-23:30 *Optional:* Watch deployment of sediment traps on aft deck.
23:30 Pau

Day 2:

- 7:15-8:15 Breakfast
- 8:15-8:45 Overview of today's schedule. Discussion. Practice oxygen sampling in lab.
- 8:45-9:00 Watch CTD recovery.
- 9:00-9:30 Collect oxygen samples from the CTD, fix samples & add seawater seal
- 9:30-10:45 Classroom lecture and discussions in conference room. Overview of C-MORE and Microbial Oceanography.
- 10:45-11:15 Prep CTD for deployment
- 11:15-12:15 Lunch
- 12:15-13:00 Meet on aft deck. Teachers will run capstan and conduct the deep net tow for the HOT group.
- 13:00-13:45 Learn how to process the net tow (sample splitting, preservation, size fractionation, and analyses). Preserve a sample and take back to the classroom.
- 13:45-14:00 Prep CTD for deployment
- 14:00-15:30 Lab: Zooplankton analysis and ID using dissecting microscopes.
- 15:30-16:30 Follow up on morning lecture. Introduce overview papers and classroom reading materials (Seasoup, ABC, Nature reviews, Agouron, Sick Seas, Fe fertilization).
- 16:30-17:15 Lab: Learn how to use the fluorometer and measure extracted chlorophyll samples. Discuss results.
- 17:15-18:15 Dinner
- 18:15-20:00 Break for sunset. Free time.
- 20:00-22:00 *Optional:* Decorate cups to go on deep cast while watching the 8PM movie in the lounge. Free time.
- 22:00-22:40 Meet on aft deck. Teachers will run capstan and conduct the deep net tow with the HOT group.
- 22:40-23:10 Lab: Zooplankton analysis and ID using dissecting microscopes. Quick lab to compare the number and type of organisms in the night tow compared to the day tow.
- 23:10 Pau

Day 3:

- 7:00-7:30 Watch recovery of gas array. Discussion.
- 7:30-8:15 Breakfast
- 8:15-9:00 Overview of today's schedule. Discussion.
- 9:00-10:15 Sample CTD for chlorophyll depth profile. Filter samples and store in the freezer for extracted chlorophyll. Also, filter water at DCM for microscopy.
- 10:15-11:15 Run oxygen samples that we collected yesterday and collect data.
- 11:15-12:00 Lunch
- 12:00-12:30 Prep for our surface net tows (80µm and 10µm mesh)
- 12:30-13:00 Aft deck: Teachers will conduct surface net tows.
- 13:00-15:15 Microscopy Lab: Analyze net tow. Pick *Tricho* and large diatoms for cultures to bring back to classroom. Make slides and look for phytoplankton using the compound microscope. Take pictures and ID the phytoplankton that we observe. Also, we'll do a microscopy lab and worksheet that can later be used in the classroom (No microscope required, because we already have images of slides for you). This is also a great time for more follow up discussions on microbial oceanography and brainstorming for curriculum development.
- 15:15-15:45 Clean up supplies, plankton net & Niskin bottle, and wrap up line
- 15:45-16:45 Break
- 16:45-17:15 Learn about flow cytometry from Ken.
- 17:15-18:00 Dinner
- 18:00-18:40 Go to bridge. Learn about how the ship operates and help drive the ship to find the PP array. Grab some binoculars and help spot the PP array.
- 18:40-19:10 Watch the recovery of the PP array.
- 19:10-19:45 Break
- 19:45-21:00 Tour of the engine room & and everything below deck!
- 21:00-21:30 Learn about celestial navigation. Introduce star charts and what to look for.
- 21:30-22:30 Check out the stars on deck using our star chart. Locate the North Star and surrounding constellations.
- 22:30-23:00 Secure our cups on the deep cast, and help prep CTD for deployment.
- 23:00 Pau.

Day 4:

- 7:15-8:15 Breakfast
- 8:15-9:00 Learn about the role fish play in the marine food web and conduct “biological sampling”. Collect cups from the deep cast last night.
- 9:00-10:15 Learn about the Physical Oceanography component of the cruise. Meet with Fernando and Jeffrey for an overview and discussion.
- 10:15-11:00 Lab: Use fluorometer to measure depth profile of chlorophyll from yesterday. Discuss results.
- 11:00-11:15 Set up computer lab for the afternoon.
- 11:15-12:15 Lunch
- 12:15-13:45 Computer Lab (using C-MORE laptops in conference room): We’ll calculate the amount of oxygen in our samples that we measured. Next, we’ll learn how to use excel to graph up our data. We’ll plot our chlorophyll, oxygen, and temperature depth profiles.
- 13:45-15:30 Rope tying on the aft deck. Learn how to tie some of the typical knots that we’ve used at sea. Make your own plankton net! We’ll have detailed instructions that you can take home to teach your class.
- 15:30-16:15 Computer Lab (using C-MORE laptops in conference room): Introduction to HOT-DOGS. Learn how to use this site to download data that you can then analyze in the classroom with your students.
- 16:15-17:00 Computer Lab: Learn how to use the Phytopia program. Everyone will get a copy to use in their classroom to teach their students about microbes.
- 17:00-17:15 Pack up computer lab.
- 17:15-18:15 Dinner
- 18:15-19:00 Break for sunset.
- 19:00-20:00 Final discussions of entire trip. Reflections. Ideas for curriculum development. Evaluations.
- 20:00-20:30 Pack up and clean science lab.
- 20:30-22:00 Relax. Group card game or movie.
- 22:00 Pau.

Day 5:

- 6:15-7:00 Breakfast
- 7:00-8:00 Pack up personal gear, clean & vacuum room, bring everything down to staging area. Finish packing up all the lab gear. Photo opportunities on the deck as we come back into port.
- 8:00-10:30 Wait for off-loading of science vans and for the ship to turn around.
- 10:30-11:00 Unload all science gear off ship and help transport to BEACH lab for temporary storage.
- 8:30 Pau.