USC Wrigley Institute for Environmental Studies

Research Experiences for Undergraduates (REU):
Coastal Ocean Systems and Sustainability

Program Handbook
For Mentors and Fellows


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THE REU PROGRAM: COASTAL OCEAN SYSTEMS AND SUSTAINABILITY

This NSF-funded Research Experiences for Undergraduates (REU) Program is run by the USC Wrigley Institute for Environmental Studies (WIES) and the USC Dornsife College of Letters, Arts and Sciences.

The REU program will support eight highly motivated and talented undergraduate students from across the country to conduct independent but guided research that focuses on Coastal Ocean Systems and Sustainability during an intensive 8-week program at the Wrigley Marine Science Center (WMSC) on Catalina Island, CA.

The program will also provide undergraduate students with training in laboratory and field methodologies, special seminars in oceanography and marine science, academic and career advisement, networking opportunities and field trips to explore different parts of the island and ecosystems.

THE WRIGLEY INSTITUTE FOR ENVIRONMENTAL STUDIES

The Wrigley Institute for Environmental Studies (WIES) is USC’s hub for environmental research, education and outreach. Our main offices are in Los Angeles on the USC University Park Campus, and we proudly oversee the research laboratories and conference facilities at the Philip K. Wrigley Marine Science Center on Catalina Island, at Big Fisherman Cove near the community of Two Harbors.

The mission of WIES is to encourage responsible and creative decisions in society by providing an objective source of marine and environmental science and fostering an understanding of the natural world among people of all ages.

Wrigley Institute-affiliated faculty conduct research in all aspects of the environment, such as the biological adaptations to climate change, interactions among humans and natural systems, and the analysis and development of environmental policy. WIES works with foundations and the public to enhance environmental awareness. More information can be found at: http://dornsife.usc.edu/wrigley/.
THE WRIGLEY MARINE SCIENCE CENTER

The WMSC is located near the town of Two Harbors on Catalina Island, about 20 miles from the port of Los Angeles, California. The location is remote but beautiful, with easy access to open ocean and coastal ecosystems. We have a 5.5-acre campus with housing, a conference center, a dining hall, a common lounge, an administrative building, a laboratory…and an ocean!

*The environment*
Catalina sits in a mild, subtropical maritime setting and has a Mediterranean climate. The marine systems between Los Angeles and Catalina range from urban/impacted sandy and rocky shorelines, to deep canyon-cut continental shelf systems, to spectacular blue water environments, to pristine rocky intertidal and subtidal kelp forests. This is a perfect setting to examine diverse marine ecosystems with adjacent lands that include contrasting uses like commercial ports, substantial recreational activity, and marine protected areas. Catalina’s terrestrial landscape is also protected (through the Catalina Island Conservancy) and includes more than 400 native plants as well as non-native and invasive species. This landscape offers an opportunity to compare land-ocean interactions in heavily human impacted vs. natural settings.

*WMSC Laboratories*
The WMSC’s 21,000 sq. ft., 3-story laboratory includes teaching facilities, six shared use research laboratories plus individual laboratories with bench space for visiting researchers; ultra clean flowing seawater, radioisotope analytical and molecular capabilities, a computer center, library, wired and wireless internet connectivity, and video-conferencing. By fall of 2014, a research greenhouse will be available for scientists to conduct plankton, aquaculture, biofuel, and terrestrial studies.

*Networking and Collaborations*
Visiting scientists and Fellows come from regional, national and international institutes, with many returning year after year. This will provide unique opportunities for REU Fellows to interact and network with a global scientific community.
FOR UNDERGRADUATE (REU) RESEARCHERS

Overview

You will spend the first week and last week of the 8-week program on the USC University Park Campus (UPC) in Los Angeles. You will be stationed at the USC Wrigley Marine Science Center (WMSC) on Catalina Island during weeks 2-7. Research schedules can be very demanding and will vary from project to project. Expect to spend well in excess of a normal “40-hour/5-day week” on your research. During the 8 weeks, you will be expected to:

1. Plan and execute an independent research project under the guidance of a USC faculty mentor and near-peer mentor (e.g., graduate student, postdoc). We anticipate that a **minimum** of 50% of your time during the program will be devoted to activities directly related to your research project.
2. Submit a written research proposal at the end of the second week of the program, which you will also present as a 10-minute oral presentation (time includes questions). Guidelines for the proposal and presentation will be provided during the first week of the program.
3. Submit a Final Report (in manuscript format) at the end of the program. Guidelines for the Final Report will be provided during the first few weeks of the program.
4. Present a poster at the USC Wrigley-CDEBI Joint Undergraduate Research Symposium, which will be held on the USC UPC on August 8, 2014.
5. Participate in other research activities in your mentor’s lab.
6. Participate in the WIES-REU seminar series.*
7. Participate in REU program field trips.*
8. Participate in career- and skill-building workshops.*
9. Attend Mentee Lunches with the REU Director and/or Undergraduate Programs Coordinator on Wednesdays.
10. Have fun and enjoy southern California and beautiful Catalina Island!

* The REU calendar of events can be found [here](#). We ask that you try to plan around REU activities when possible, but please keep in mind that research should be your priority. Please inform the REU Program Director and/or REU Coordinator of any conflicts in schedule as far in advance as possible.
The Research Project

1) *The Proposal*: During your first week of the program, you will work closely with your mentor(s) to design a project that will potentially yield or contribute to publishable results. Since good science often thrives on collaboration and interaction among researchers, you will develop and present a research proposal to the WMSC science community for feedback at the end of the second week of the program (10 minute talk, including feedback and questions). *It is recommended that you turn in a draft of your proposal to your mentor(s) by the second Monday of the program and go through at least one practice run of your presentation with your mentor(s) and the other members of your lab group prior to delivering your presentation to the WMSC science community.* You will receive a “Proposal Guidelines for REU Fellows” document with complete details about the proposal upon your arrival to USC. Feedback and questions should be addressed, and a final version of your proposal will be due to the REU Program Director and/or Undergraduate Programs Administrator.

2) *Execution of the Project*: The details of each project will define your work schedule for the summer. You will work with your mentor(s) to develop a research proposal, which should include a timetable that outlines the tasks that must be completed in order to finish the project in the 8-week period. We encourage you to trade field and laboratory help with other REU Fellows in the program and other members of your mentor’s laboratory. Most researchers (undergraduate and otherwise) at the USC WMSC work 5 to 7 days each week, and 8 - 12 hours per day. Again, you will design a research schedule with your mentor(s) based on the nature of your project. Be prepared for potentially erratic or irregular working hours.

3) *Laboratory notebooks*: Each student will be given a laboratory notebook at the beginning of the program. Notebooks should be used to keep detailed notes of the research project, including experimental design of field work and/or lab experiments, results and other notes that are pertinent to the research project. We strongly encourage you to be diligent about taking detailed notes, and to create a duplicate electronic copy of your notes if possible (especially if you take your notebook out into the field).

4) *Weekly meetings*: The REU Fellows will be required to meet with their faculty mentor at least once a week, even though REU Fellows will be working frequently with their near-peer mentor(s). During the weekly meetings, you should be prepared to provide a progress report to your faculty mentor, including results, issues, troubleshooting ideas, next steps, and other research-related matters. Each fellow-faculty mentor pair will determine the best day to have these weekly meetings, which can be done in person or via video conferencing. You should take very detailed notes during these meetings, and make sure that you clearly understand any expectations, comments and/or suggestions expressed by your faculty mentor.
5) The Final Report and Poster Presentation: You should plan to end your data collection at least 10 days before the last day of the program. Data analysis and interpretation as well as the process of putting together a poster and final report usually take longer than planned, so we suggest you begin this process as early as possible. Keeping detailed notes as you conduct your research will help you develop your final report and poster. Your mentor will help you analyze and interpret your data, and further guidelines for the final report and poster presentation will be provided during the first few weeks of the program. Electronic versions of the final report will be due on the last day of the program, and will be bound together into a single volume that will be kept at the USC WMSC library. Your Final Report abstract will be “published” on the USC WIES-REU program web site. You will present a poster at the USC Wrigley-CDEBI Joint Undergraduate Research Symposium, which will be held on the USC University Park Campus on August 8, 2014 and will be open to the USC and the WMSC community.

5) Lab Cleanup: It is important that your activities do not result in additional cleanup work for other researchers after you leave. Before leaving the WMSC and the USC UPC, you must clean your workspace in your mentor’s or assigned lab space and dispose of any samples that your mentor does not plan to save using approved protocols. For WMSC lab spaces, you will receive a “Checkout List” that needs to be approved by the WMSC lab manager (Lauren Oudin) or the lab technician (Kellie Spafford) to show that your obligations have been met prior to your departure.

6) Acknowledgements: The National Science Foundation requires that any publication resulting from, or including, work supported by the NSF REU-Sites program include the following acknowledgement: “This material is based upon work supported by the National Science Foundation under NSF Award OCE-1263356.” You should also acknowledge the Wrigley Institute for Environmental Studies, USC Dornsife, your faculty mentor(s), near-peer mentor(s), lab mates, and anyone else who helped you during the summer.
WMSC Lab Supervision Policy
Draft date: 30 May 2013

To conduct research in a lab unsupervised, all undergraduate students must complete a 6-hour campus safety course (or the equivalent at your home institution) and a 1-hour WMSC-specific safety talk.

To work in a lab under supervision (by a graduate student or instructor/faculty), all undergraduates must complete a 3-hour safety course (or the equivalent at your home institution) and the same 1-hour WMSC specific presentation. All supervisors must complete the 6-hour training and the 1 hour WMSC-specific safety talk.

Undergraduate students enrolled in academic courses need only complete the 1-hour WMSC-specific safety talk.

No one is permitted in the Radiation Lab unless they have completed the Radiation Safety Course and are named on a current Radiation Permit.

Students under the age of 18 are not allowed to work unsupervised in the labs. If ANY students in a group are under 18, the group must have a supervisor (who has completed the six-hour training) and an adult chaperone to watch over each “bay” being used in the lab). Chaperones are not required to complete any formal training, but are encouraged to complete the 1-hour WMSC safety course.

*Note: Students over 18 are allowed in the lecture hall, computer room and library at any time without supervision.*

USC Lab Safety Course Information:

**REU Fellows will complete the 6-hour laboratory safety training course on the first day of the program on the USC UPC, which will enable them to work independently in labs.**
REU Activities

The USC WIES-REU Seminar Series
Throughout the 8-week period, the USC WIES-REU program will organize a summer research seminar series. These 1-hour research seminars will typically occur on Thursdays and will give the REU Fellows an opportunity to meet other researchers and learn about current marine and environmental research. The seminar series will also include presentations by REU mentors during the first week of the program.

Career- and Skill-Building Workshops
Several career- and skill-building workshops will be organized for REU Fellows. Topics can include: scientific communication (proposals, presentations, and scientific papers); applying to and choosing a graduate school and program of study; career opportunities in science; ethical issues pertinent to research; and more. REU Fellows will also receive introductory lectures in oceanography and marine science, participate in an Arc-GIS and GPS training workshop, and go on a 1-day training research cruise to learn methods in oceanography. Topics and workshops will be updated on the REU Calendar.

Mentee Lunches
The USC WIES-REU Program Director, Dr. Karla Heidelberg, and REU Coordinator, Dr. Diane Kim, will be available to meet with the REU Fellows over lunch on most Tuesdays throughout the summer. These meetings will provide REU Fellows with an informal forum to openly discuss their progress, challenges, and/or questions they have about their research project or other REU-related matters. This will also be a time for the REU Director and Coordinator to make important announcements.

Field Trips and Orientation Activities
During the orientation week (week 1) of the program, REU Fellows will get a tour of USC and WMSC campuses and research laboratories, have a “meet and greet” with other undergraduate researchers and mentors (faculty and near-peer mentors), receive laboratory safety training, visit the Natural History Museum, and more!

Throughout the 8-week period, there will also be field trip opportunities to explore Catalina Island, such as a kayak and beach camping trip to Parsons Landing on the weekend of July 26-27. Activities will be updated throughout the summer on the REU Calendar.

The REU calendar of events will be continuously updated throughout the summer and can be found here.
**Finances and Travel**

**Finances**
REU Fellows will receive their summer stipend in two installments of $2000. Housing and most meals will be covered by the REU program.

For non-USC students: you will receive an e-mail from USC’s Supplier Portal (technicalsupport@sciquest.com) to complete a new vendor application (non-USC students need to be set up as an ‘external vendor’ for payments). Please fill out the application, which will also include an option to set up direct deposits. If you have any problems filling out the application, please contact the Portal help desk at 213-740-2716.

For USC students: you will receive a W-2 form that you will need to fill out and submit to the REU Coordinator.

*Taxes:* Non-CA residents will incur a 7% CA state withholding fee.

**Travel**
Travel expenses will be covered by the program (up to $500). The REU Director and/or REU Coordinator will contact you in early to mid-April to begin arranging your travel.
WMSC Information Guide
http://dornsife.usc.edu/wrigley/wmsc/

Housing
You will be housed two to a room, with two rooms sharing a bathroom. Our rooms are very comfortable! All rooms have windows, desks, lamps, and dressers. We will provide your linens, blankets, pillows and towels, but please bring a beach towel. We ask that visiting researchers please keep voices and noise levels low between the hours of 9:00 p.m. and 8:00 a.m. in respect of other visitors.

Transportation to the WMSC:
You will be traveling on the USC vessel, the Miss Christy, to cross the San Pedro channel. The boat departs from the Southern California Martine Institute (820 S. Seaside Ave., Terminal Island, CA 90731). The transit takes approximately 90 minutes.

This boat is governed by USC policies and regulations of the U.S. Coast Guard.

- For service Monday through Thursday, the typical times of departure are 7:30 a.m. for the trip from San Pedro to the WMSC and 3:30 p.m. for the return trip from the WMSC to San Pedro.
- For service on Friday, the typical times of departure are 8:00 a.m. for the trip from San Pedro to the Wrigley Marine Science Center and 12:30 p.m. for the return trip from the WMSC to San Pedro.
- Advance reservations are required. (The vessel has a maximum capacity of 45 passengers.) To arrange for transportation, please send a message by email to: wiesboat@usc.edu and provide your name, a contact phone number, dates of travel, and your affiliation with the WMSC (i.e. REU student).
- The boat leaves on time, with or without all passengers listed on the vessel's manifest.
- **Closed-toed shoes are mandatory for all passengers aboard USC vessels.** Anyone wearing open-toed footwear, such as sandals, will not be permitted to board.
- Smoking and consumption of alcohol are prohibited aboard USC vessels.
- For other information regarding the USC boat service, call the main office at the Wrigley Marine Science Center at (310) 510-0811.

Motion sickness
If you tend to get motion sickness, options include Dramamine and Bonine (which make some people drowsy), acupressure wrist patches, ginger (begin eating it several days prior to the trip). We also recommend that you eat before traveling, but avoid acidic foods like citrus or coffee.
**Dining:**
Our dining hall is right next to our housing facility. Meal times are as follows:

- **Breakfast** - 7:30 - 8:00
- **Lunch** - 12:00 - 12:30
- **Dinner** - 6:00 - 6:30

Our chefs, Phil and José, will do everything they can to accommodate all tastes. Prior to the start of the program, you will be asked if you have any special dietary restrictions or concerns (vegetarian, vegan, kosher, etc).

The dining hall will be open 24/7 so that you will have access to the soda and water fountain, coffee dispenser, tea, hot water, ice, fruits, cereals, and milk. There are also vending machines (soft drinks and candy) located in the dining hall and in the lab building.

**Lounge:**
The lounge is located just off the dining hall and is open 24 hours a day. We have satellite TV, DVD/VCR players, board games, ping-pong and pool tables.

**Smoking:**
Smoking is not permitted inside buildings or vehicles at the WMSC. There are designated smoking areas.

**Laundry:**
The laundry room is located to the left of the cafeteria door. Machines take quarters ($1.00 for the washers and $1.00 for the dryer). Soap is available in a vending machine, and a change machine is located in the laundry room.

**Main Office:**
The office is located in the trailer across from the lab building. The phone number is (310) 510-0811. Any mail delivered to the WMSC will be sent to this office. Xeroxing, FAX services, stamps, quarters and just about anything else you need may be found here!

**Gift Shop:**
The gift shop is located in the main office. Gifts, T-shirts, postcards, maps, etc. are available. The gift shop is open Monday-Friday, from 9 am to 5 pm. Please ask in the main office if you need something at another time.

**Library and Computer Facilities:**
Our small library has basic reference books and a good collection of local guides to marine life. We have two computer labs furnished with both Macs and PCs, CD/DVD drives, printers and a scanner. All computers are connected to the Internet by a high-speed (T-1) cable. You’ll definitely be in email contact with the world! If you have a laptop computer, you are of course more than welcome to bring it along. You will have access to USC’s wireless network from anywhere on the WMSC campus.
Recreation:
In addition to indoor fun such as ping-pong and pool, we suspect you’ll be very interested in some wonderful outdoor fun! We suggest snorkeling in our marine reserve or perhaps a relaxing early morning kayak through the kelp beds. And no, you don’t need to bring your own kayak...we have plenty for you to enjoy (both single and double kayaks. No experience necessary...just a quick training orientation)! Please see below for more information.

Community:
The northwest end of Catalina Island, where the Wrigley Marine Science Center is located, is wonderfully wild. Two Harbors, a tiny town, is less than 2 miles (and a lovely walk) away along a dirt road. You’ll find a small general store with a few essential items for sale, a shop for renting a mountain bike or diving gear, a restaurant and a snack bar. About 150-200 people live there; you’ll meet some of the residents immediately because they work at the lab. In the summer, Two Harbors hops with visiting boaters, who moor in Isthmus Cove or nearby in Fourth of July and Cherry coves.

Responsibilities, Policies and Problems
Each participant should review our visitor information posted at http://dornsife.usc.edu/wrigley/visitors/. Please consult the REU Director or REU Coordinator if you have any problems or needs during the program. It is the job of the REU Director and REU Coordinator to make sure that your project is running smoothly and will be successfully completed, and to be your advocate in any matter affecting your productivity and happiness at USC and the WMSC. The REU Director and REU Coordinator can also help you obtain supplies or equipment necessary for your project and can mediate any misunderstandings that might arise between you and your mentor, coworkers, Marine Center staff, or roommates. All residents at the WMSC are expected to conduct themselves in a responsible adult manner. The USC WIES Executive Director reserves the right to dismiss any person for inappropriate behavior or whose actions are judged to pose a danger to him/herself or others. Underage drinking and substance abuse are illegal and will not be tolerated.

Forms we need from you:
- WMSC Medical Form
- WMSC Waterfront Waiver
- WMSC Supplemental Questionnaire
Packing Help

Los Angeles in the summer is dry and warm, with temperatures ranging between 75°F and over 100°F. The island is very different from Los Angeles. It is cooler and windier, especially in the evenings, so bring clothing that you can layer, including a good jacket. The island is not completely paved like LA either – we have some paved roads but also many dirt roads. Monitor weather and sea conditions (http://www.ecatalina.com/weather.html) to better plan your packing.

Some items to remember to bring are:
  - Bathing suit (1-2)
  - Beach towel (bath towels are provided, but must stay in your room)
  - Shoes that can get wet that are not flip flops (although you can also borrow booties from the WMSC)
  - Close-toed shoes (you must wear them on the Miss Christy)
  - Windproof jacket
  - Fleece or other warm jacket
  - Hats – one with a brim and one for warmth
  - Daypack for hiking
  - Water bottle
  - All your toiletries
  - Medications – no pharmacies nearby at the WMSC!
  - Motion sickness medication

You can bring snacks to the island, but all food should be sealed in Ziploc bags because Catalina ants love snacks! The ravens and foxes are also quite clever, so please don’t leave snacks outside and unattended (even if they’re in your bag – ravens have learned to unzip bags).

We have snorkel gear and wetsuits at the WMSC, but if you prefer to use your own snorkel gear, please bring it. Label it with your name, if you can.
Recreational Activities at the WMSC

Kayaking **
We have kayaks, paddles, and personal flotation devices (PFDs) for you to use while you kayak (PDFs are required). Prepare to get wet. There is always the chance that your kayak will capsize. You must wear captured-heel shoes with gripping soles. Old tennis shoes, Keen or Chaco sandals are good choices. The WMSC also has booties that you can borrow. Flip-flop style shoes without a heel strap are not allowed. We recommend that you wear a hat and sunscreen for sun protection. There is a place at the waterfront to store your belongings while you kayak.

Snorkeling **
We have wetsuits, masks, fins, and snorkels for you to use. If you wear glasses, you’ll need to wear contact lenses or a prescription mask unless your eyesight is good enough to go without glasses. Bring a beach towel. There is a changing room and showers at the waterfront and a place to store your belongings while you snorkel.

** The following are required for all waterfront activities:
- **Waterfront Orientation**: All students must participate in waterfront orientation and training before use of any waterfront gear or swimming in Big Fisherman Cove. This training will help you learn about safety and what to do in case of emergencies, where to find wetsuits and how to gear up, where to find kayaks, and how to properly put away equipment.
- **Medical Form**
- **Waterfront Liability Waiver Form**

Hiking
There is awesome hiking on Catalina! But be careful because trails on the island are rocky, uneven, and frequently steep. We recommend that you wear sturdy walking shoes. Many of Catalina’s plants have spines or seeds that can scratch your legs so long pants are best. We also recommend that you wear a hat and sunscreen for sun protection and that you bring a full water bottle with you on your hike. Have fun, but be aware of your surroundings – we have cacti, rattlesnakes, and bison (buffalo) on the island.

Mountain Bikes
Mountain bikes and helmets are available for check out at the main office.

Volleyballs (and a volley ball court), Soccer balls, badminton sets, and frisbees are also available at the main office.

If you do any field activities (including swimming) on your own while at the WMSC:

Before you go, please
- Familiarize yourself with your route or the area you’re going to so that you can return safely
- Let someone know where you’re going

When you return, please
- Put away any WMSC gear properly
FOR REU MENTORS

**Important dates:**

June 16-20 (week 1): REU Fellows will be on the USC UPC and spend most of their time in mentors' labs.

June 27 (Friday): REU Fellows will give an oral presentation on their summer research proposal at the WMSC on Catalina Island.

August 4-8 (week 8): REU Fellows will be on the USC UPC and spend most of their time in mentors' labs.

August 8 (Friday): REU Fellows will present their posters at the USC Wrigley-CDEBI Joint Undergraduate Research Symposium.

**Time Commitment:** We are committed to help faculty mentors and their labs establish and maintain effective communication with their REU Fellow(s) throughout the 8-week program. We expect mentors to schedule meetings with their REU Fellow(s) for weekly progress reports including discussions about results, next steps, trouble-shooting and other research related matters. We will set up a Google calendar for each mentor-mentee pair that should be used to coordinate a research schedule as well as meetings. The REU Director and REU Coordinator will have access to these calendars to facilitate planning. We strongly encourage you and/or members of your laboratory to be in residence at the WMSC for as much of the 8-week program as possible. The mentor's role is especially essential during the first two weeks and last two weeks of the program.

**A note on mentor teams and shared mentoring responsibility:**

We believe that fully integrating the REU Fellows into your research team and program would greatly benefit the REU Fellows by exposing them to the numerous activities taking place outside of their individual project, in addition to providing them with an additional network of people to provide mentoring support when you are not available. However, if you plan to assign primary responsibility for your undergraduate researchers to post-docs, graduate students and/or some combination of personnel in your lab, please keep in mind that faculty mentors are expected to directly interact with REU Fellows at least once a week, either in person or via video/phone conferencing, to provide meaningful mentorship.

Students frequently state that they want a faculty mentor to call their own from day one and find multiple mentor situations confusing and uncomfortable unless mentors coordinate their activities well. The REU Director and REU Coordinator will work with you to promote effective lines of communication. **The goal of the program is to provide the best mentoring situation for the REU Fellows, so please keep this in mind when developing a mentoring plan for your student.**
**Prior to the program:** Mentors should contact their undergraduate researchers as soon as possible (prior to the start of the program) to provide them with a description of the mentor’s research program and a list, or reprints, of relevant readings or presentations that will provide context for the summer project. Beginning a dialogue about a summer research project prior to the start of the program will help the student hit the ground running.

**The first week:**
REU Fellows will spend the first week (June 16-22, 2014) on the USC UPC for orientation, training, and to develop research plans with their mentors. We ask that faculty mentors and other personnel from mentor's laboratories be available for an REU “meet and greet” session during the first or second day of the program. REU Fellows will spend most of the first week working with mentors to design and begin executing a research project. Please keep in mind that REU Fellows will submit a written proposal and deliver an oral presentation of their proposal at the end of the second week at the WMSC.

**The Research Project**
During the first week of the REU program, the mentor should work with the REU Fellow to develop a research plan. At this time, the mentor should also establish his/her expectations for the REU Fellow, including but not limited to: 1) the Fellow’s participation in other aspects of the mentor’s research programs; 2) working hours; and 3) authorship of work conducted in collaboration with the Fellow. Please make sure expectations are clear and that the REU Fellow is able to participate in all aspects of the project’s design, execution, and interpretation.

1) **Project Topic:** Mentors should help their undergraduate researchers design projects that have the potential to yield publishable results. *Ideally, the work the Fellow does for his/her project will be complementary to other projects in the mentor's lab.* It is, of course, not reasonable to expect that all REU projects will result in a peer-reviewed publication. However, if the goal of the research project is to generate results that may ultimately produce either a first-authored publication for the Fellow or a larger publication with the Fellow as a junior author, mentors and Fellows are often more satisfied with the process.

2) **Research Proposal:** At the end of the second week of the program the REU Fellows will provide oral presentations of their research proposal to the USC WMSC community. Since some Fellows will not have any experience making such presentations, mentors should go through at least one practice run of the talk before the formal presentation. A written proposal will also be due, and a short summary of research proposals will be published on the USC WIES REU webpage.
3) **Weekly meetings:** The REU Fellows will be required to meet with their faculty mentor(s) at least once a week, even if they will be working frequently with their near-peer mentors (graduate students, postdocs). During the weekly meetings, REU Fellows will provide a progress report to mentor(s), including results, issues, troubleshooting ideas, next steps, and other research-related matters. Each fellow-faculty mentor pair will determine the best day to have these weekly meetings, which can take place in-person or via telephone or video conferencing.

4) **The Final Report and Poster Presentation:** During the last two weeks of the program, mentors should help their undergraduate researchers analyze and interpret their data, as well as prepare the final report and poster. Final reports are due on August 8, 2014 (last day of the program), and will be bound together into a single volume that will be kept at the USC WMSC library. The Final Report abstracts will be “published” on the USC WIES-REU program web site.

On August 8, 2014 (Friday), each REU Fellow will also give a poster presentation on his/her project at the USC Wrigley-CDEBI Joint Undergraduate Research Symposium. Throughout the summer, REU Fellows will be instructed on how to create a poster, but ultimately mentors are responsible for helping the REU Fellow produce a poster and prepare for the symposium. Please encourage the undergraduate researchers to present their poster at other regional and national scientific meetings as well.

5) **Follow-up:** Please inform the REU Program Director (Kheidelb@usc.edu) and/or the REU Coordinator (dianekim@usc.edu) of any publications or presentations at scientific meetings that you coauthor with your undergraduate researcher.

6) **Acknowledgement:** The National Science Foundation requires that any publication resulting from, or including, work supported by the NSF REU-Site program include the following acknowledgement: “This material is based upon work supported by the National Science Foundation under NSF Award OCE-1263356.”

**Thank you!**

Being an REU mentor has both some cost and some great benefits to you. We greatly appreciate your willingness to serve as a mentor. We hope that you find it rewarding as well as scientifically productive. Please talk to the REU Program Director and/or REU Coordinator if you have any problems, criticisms or suggestions.
**USC WIES REU Program Contact Information:**
*If you encounter problems with the REU program, or have any general comments that you would like to share, please contact the REU Program Director and/or REU Coordinator:*

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The Program Director for this REU site is Dr. Lisa Rom (Ocean Education, Division of Ocean Sciences): elrom@nsf.gov or (703) 292-7709. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.
2014 REU Faculty Mentors
Note: more faculty mentors may be added. Check [here](#) for all faculty affiliated with the USC Wrigley Institute for Environmental Studies.

REU Fellows will also be paired with near-peer mentors from faculty labs (graduate students, postdocs).

- Dr. David Caron (Professor of Biological Sciences, Marine Environmental Biology)
- Dr. Suzanne Edmands (Professor of Biological Sciences, Marine Environmental Biology)
- Dr. Andrew Gracey (Associate Professor of Biological Sciences, Marine Environmental Biology)
- Dr. John Heidelberg (Associate Professor of Biological Sciences, Marine Environmental Biology)
- Dr. Karla Heidelberg (Assistant Professor of Biological Sciences, Marine Environmental Biology)
- Dr. Sujin Lee (Assistant Professor of USC Spatial Sciences Institute)
- Dr. Kenneth Nealson (USC Wrigley Chair in Environmental Studies and Professor of Earth Sciences and Biological Sciences)
- Dr. Sergey Nuzhdin (Professor of Biological Sciences, Molecular Computational Biology)
- Dr. Darren Ruddell (Assistant Professor of USC Spatial Sciences Institute)

**2014 REU Fellows:** TBD, applications are due by Feb. 17, 2014