



Moss Landing Marine Laboratories

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(<http://www.mlml.calstate.edu>)

MLML-UROC Undergraduate Research Opportunity

MLML and a MLML graduate student both take on significant responsibilities when that student becomes an MLML-UROC Graduate Student Research Mentor. These responsibilities include provision of a meaningful educational experience, resources to conduct the research, and training so that the research is safely accomplished. For this reason, MLML must approve the participation of its graduate students in this program.



Eligibility for becoming a Graduate Student Research Mentor is limited to MLML graduate students that are in good standing and with an approved thesis proposal --otherwise we do not consider that the graduate student has a project under which a undergraduate student may be mentored; an exception may be made when an MLML faculty member is principal investigator, oversees the project, and the MLML graduate student is assisting the faculty member.

Please provide the information requestd on the following pages to apply for eligibility to become a Graduate Student Research Mentor. Approval from MLML precedes final consideration by the CSUMB UROC program.

<u>Pamela Neeb Wade</u>	<u>5/22/15</u>
MLML Graduate Student	Date

Approve (A), Approve with amendment* (M), Disapprove (D)		
<hr/>	<input type="checkbox"/> A / <input type="checkbox"/> M / <input type="checkbox"/> D	<hr/>
MLML Faculty Advisor		Date
<hr/>	A / M / D	<hr/>
MLML Faculty Co-Advisor, if applicable		Date
<hr/>	<input checked="" type="checkbox"/> A / <input type="checkbox"/> M / <input type="checkbox"/> D	<hr/>
MLML Safety Officer		Date
<hr/>	<input type="checkbox"/> A / <input type="checkbox"/> M / <input type="checkbox"/> D	<hr/>
MLML Administrator (Chair or Director)		Date

*see ammendment page.

MLML Graduate Student

1. Name: Pamela Neeb Wade
2. Email Address: pneebwade@mlml.calstate.edu
3. Phone Number: 831-917-9108
4. Year or Anticipated completion date: December 2015
5. Faculty Advisor: Dr. Jon Geller
6. Faculty Coadvisor, if applicable. _____
7. Do you have an approved thesis proposal that is the basis for this project? **Y**/ N
8. Are you in good standing? **Y**/ N
9. Project Description, with emphasis on elements that include UROC Student participation. Use the following space or attach one page (one paragraph).

My research is focused on the affect invasive invertebrates have on the growth and survival of Olympia oysters in the Elkhorn Slough. The oysters for this project have been outplanted on settlement tiles at two tidal heights (+1.0 and -1.0 MLLW) at Hudson's Landing. A vertical survey of bridge pilings will be conducted to determine invertebrate abundance at the two tidal heights. In addition a survey will be done of the tube worm reefs that exist along the mudflats.

10. UROC Student's Anticipated Role. Use the following space or attach page (one paragraph).

The UROC student will participate in fieldwork, including measuring oysters, cleaning tiles and photographing tiles. The student will also assist with surveys and photo analysis. The student will learn how to conduct surveys and sample using a transect and quadrat. They will also learn to use two different imaging software programs (ImageJ and PhotoQuad) to analyze photographs.

11. Append a detailed description of all procedures and protocols that will be used by the UROC Student, including a description of equipment, vehicles, boats, chemicals, or any other potentially hazardous element to the research plan.
12. For each protocol or procedure, append a training plan for the UROC Student. (Note that training must be completed and documented before research can commence).
13. Append a list any necessary equipment, supplies, or resources not provided by UROC, the MLML graduate student, or your faculty advisor (e.g., SEM or other microscopes, flume, molecular classroom).

Appendix 1. Procedures and Protocols

The UROC student will be accompanying me at the field site (Hudson's Landing) in Elkhorn Slough. They will be walking through mud wearing either a wetsuit and booties or chest waders. They will be standing in water waist deep. During two days they will be using a sit-a-top kayak or canoe to paddle out with me to the pilings of the railroad bridge, approximately 50 yards from the usual field site to conduct vertical surveys of the tubeworm reefs.

Appendix 2. Training Plan. (Training must be documented and filed with the MLML Safety Officer).

I will train the UROC student on the following, before going to the field site:

Proper measuring of oysters

Data recording

Photographing settlement tiles

Transects and sampling

Additionally, we will review safety procedures and proper attire (wetsuit and booties or chest waders).

I will have a first aid kit available during fieldwork and life jackets when we are kayaking.

Appendix 3: MLML equipment, supplies, or other requested resources.

n/a

AMMENDMENTS

Faculty Advisor/Co-advisor

Signature

MLML Safety Officer

Signature

Chair

Signature