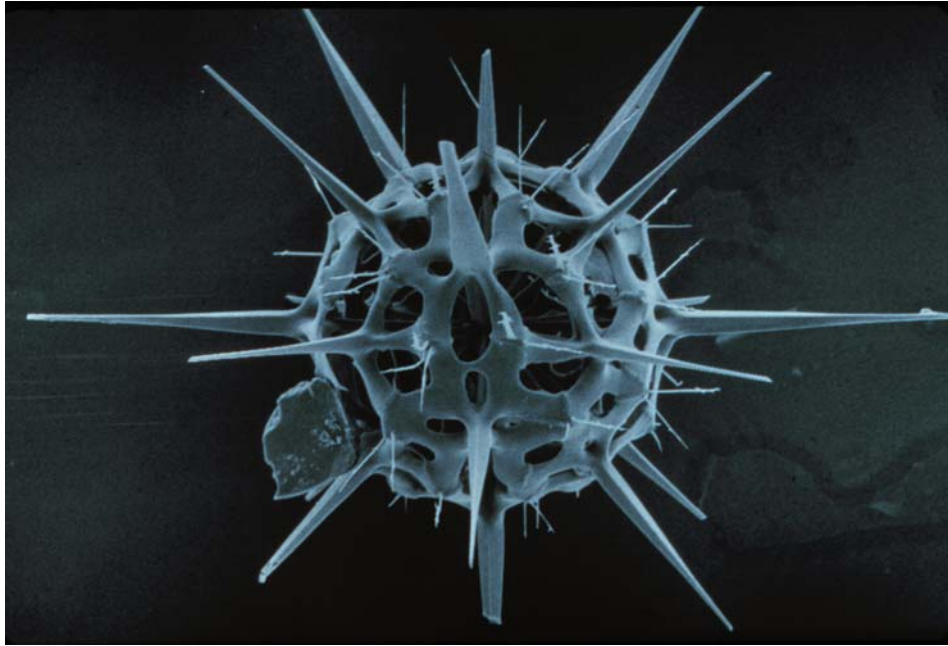


STUDENT ORIENTATION GUIDE
Marine Environmental Biology Section
University of Southern California



Fall 2005

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Welcome

Welcome to graduate study in Marine Environmental Biology at USC! You are officially embarking upon your professional career in academics, and we hope your years here are exciting, challenging, and fruitful. The purpose of this brochure is to try and help smooth the way during your first few weeks, as well as to provide some basic information with regard to our program, being a graduate student at USC, and life in LA in general. In addition to this guide, a good source of information is the free booklet entitled *SCampus*, which you can obtain at Topping Student Center. Of course, it is always a good idea to solicit information and advice from more senior graduate students and from faculty. Senior graduate students can be very helpful for adjusting to the “personal” side of life at USC, while Faculty and the Graduate Student Coordinator should be your source of information for “official” aspects of the program and academic life.

Our support staff is also available to help out with procedures for registration and other logistical details. Linda Bazilian, the Graduate Programs Manager for Biological Sciences; is in AHF 107-D, mc 0371, x11088. Linda is highly knowledgeable concerning all aspects of the graduate program.

Once again, welcome to the program!

Douglas Capone
Director, Marine Environmental Biology

~~Orientation Schedule~~
Marine Environmental Biology Graduate Program
Fall, 2005

<i>DATE</i>	<i>ACTIVITY</i>	<i>LOCATION</i>
August 19 (Friday) 8:30am-5:00pm	Laboratory Safety Training	ZHS 159
TBA	Orientation	Conference Room
August 15 (Monday) Noon	Biological Sciences Welcome Picnic (All students/faculty/staff are invited).	AHF Lawn
August 18-19 (Wednesday-Thursday) 8:30am-5:00pm	College Teaching Assistant Training	Bovard Auditorium
August 16 (Tuesday) 10:00am-11:30am	Biological Sciences Teaching Assistant Meeting	ZHS-159
August 16 (Tuesday) 11:30am-2pm	Individual Course Teaching Assistant Meetings	To be arranged

NOTE:
Items in bold require your attendance.

All students who are TA's must attend the College Teaching Assistant Training sessions or you will not be allowed to teach in the fall semester. Additionally, all TA's must attend the meetings on Tuesday, August 16.

Additional meetings to be arranged: Radiation Safety training will be required early in the semester.

If you have questions and/or conflicts with this schedule, please see Linda Bazilian immediately.

Registration Process

ACTION

SEE

- 1) First-year students: Set up advisement appointment with your advisor
Continuing students: Check your e-mail for registration instructions
- 2) Obtain signed approval form from your advisor and return it to Linda Bazilian for "D" clearance.
- 3) Register via WebRegistration (follow directions in the *Schedule of Classes*).
- 4) Get your fee bill and pay all necessary fees by deadline.
Domestic students pay online or at the Cashier's Office. International students pay by check.
Fees:
Graduate Orientation Fee (one-time fee)
Topping Center Fee
Graduate Student Services Fee
Graduate Program Fee
If you have any problems with your fee bill, please see Linda Bazilian, Graduate Programs Manager (x11088).

A couple of days after you register for classes, Information Services Division (ISD) will issue your USC email address. Check the status of your email address at www.usc.edu/firstlogin. Registration is also needed to get a parking permit and to obtain a USCard, required for such activities as library and Lyon Center privileges.
- 5) Pick up your ID card from USCard services (Commons Lobby).
- 6) Get validation sticker, good for campus discounts, from Don Bingham, the MEB Administrative Coordinator.

Registration Directory

Registration Packets Enrollment, Drop/Add & Audit	Registration Bldg. (REG) 1 st Floor
American Language Institute	ALI: HSS Building, 938 W. 34 th Street
Office of International Students	STU 300
USCard	Commons Lobby
Health Insurance	A649 W. 34 th Street (1 st floor Parking Structure D)
Housing/Dining Services	Parking Structure C
Financial Aid	Hazel and Stanley Hall (HSH)
Parking Permits/Ridesharing	Transportation Svcs at Childs Way Bldg. 1
Payment of Fees/Cashier's Office	King Hall, 2nd Floor

Student Health and Insurance

USC pays Teaching Assistants' and Research Assistants' fees for student health insurance, use of the student health center, and dental care. All students registered for at least 6 units are automatically enrolled for health and dental insurance.

Student Health Center (213/740-5344)

The Student Health Center provides primary care, basic emergency care, an urgent care clinic, Saturday clinics, specialist clinics, and a pharmacy. You are eligible for the Health Center if you are enrolled in classes.

A Health Center fee is listed on your fee bill. Most care is free; however, there are nominal charges for some lab tests, prescriptions, orthopedic appliances, and copies of medical records. Also, if you are not taking classes (as in summer) you must pay the appropriate fee to use the Center. Hospitalization is NOT covered, but may be purchased separately.

MEB Program Life

Seminars

MEB graduate students are to attend and participate in MEB research seminars, held Tuesdays from noon to 1:00pm in the AHF Torrey Webb Room (TWR). Seminars have a question and answer period, and sometimes lunches with students and the speaker are scheduled. The seminars therefore give students a chance to learn about research outside their area of specialization and to meet distinguished scientists from other institutions.

Each semester, MEB distributes a list of seminar speakers chosen and invited by its students and faculty. Seminar notices are also posted near AHF 107 and updated weekly on the Biological Sciences Homepage.

Other USC departments, such as Neurobiology, Molecular Biology, Gerontology, Medical Sciences (Biochemistry, Microbiology, Pathology, Cell and Anatomy, Molecular Pharmacology and Toxicology) also hold seminars. These seminars and seminars offered at other universities are posted outside AHF 107.

The Marine Environmental Biology Office (AHF 107)

While your faculty advisor will advise about academic matters, administrative support is available from staff in AHF 107. For matters relating to your research or the graduate program, first see *Don Bingham*, the Administrative Assistant for the Marine Environmental Biology program. Don deals with issues like MEB requirements, ordering office supplies, maintaining equipment, visitor parking, mail distribution, phone and computer line installation, and key acquisition. *Linda Bazilian*, the *BISC Graduate Programs Manager (x11088)*, handles questions about registration, grades, Graduate School requirements, etc. For computer support, see *Keun Song*, or call USC computer technical support at x 0-5555. Also in AHF 107 for your research purposes are a typewriter, computers, a scanner, a fax machine (213-740-8123), and two copiers.

Mailroom/Post Offices/Fed Ex

Put outgoing campus and stamped mail in the AHF 107 mailroom. You will have a mailbox there.

MEB's complete address:

USC, Marine Environmental Biology, Dept. of Biological Sciences,
AHF 107, Los Angeles, CA **90089-0371** ← important!

MEB's **mail code, 0371**, directs intercampus mail to the AHF 107 mailroom.

Fed Ex drop is at Kinko's, located below the USC bookstore. The pick up deadline is 4:00pm. All Fed Ex's must be charged either to an account number. Your advisor can help you determine the account to charge.

Full service post office: 3585 S. Vermont Ave., across from campus.

Limited service post office: in the Commons Lobby.

Keys, Security

The MEB Administrative Coordinator distributes keys. Each key requires a \$10 refundable deposit.

Security is a very serious matter at USC. Please ensure the safety of MEB people and property. Never leave your keys unattended or loan them to others. Also, do not prop open any door to the outside. That invites theft, unsavory individuals, or both. If someone you don't recognize loiters in AHF, call Security (x0-6000 or x04321—emergency).

Libraries

Seaver Science Library (SSL), in the Seaver Science Center, is the main science library on the University Park campus. Current journals are on open shelves on the first floor. Older journals are bound and shelved with books on the upper floors. Periodicals cannot be checked out, but copiers are available. Reference librarians on the first floor can help with database searches, computer networks, etc. Also, older materials may be ordered on-line from the Hancock storage area and picked up at this library.

Hancock Natural History Collection is in Special Collections on the second floor of **Doheny Library (DML)**. The Collection has early research materials on systematics, oceanographic expeditions, and marine biology research published before 1900. You may also order hardcopy materials on-line from USC's off-site Grand Depository via the HOMER online library catalog and pick them up at Doheny. Also, inter-campus loans may be requested through the Academic Resources Gateway Office (ARGO).

USC has on-line access to a vast number of natural history materials, such as Limnology & Oceanography, and Oceanic Abstracts. Visit library.usc.edu to access the electronic resources.

USC Library Card

Apply for a card at the main circulation desk in Doheny or Seaver library.

Off campus libraries

USC Norris Medical Library is on the Health Sciences Campus (HSC). Seaver Library reference librarians can help you have the library copy journal articles for you and send them to you at Mail Code 0371.

You may apply for a UC Los Angeles (**UCLA**) library card through **UCLA's Biomedical Library**. This library is great because it can access almost any journal, no matter how obscure or old. On-site copy machines use debit cards you buy from library vending machines. UCLA is ten miles west of USC and accessible by bus.

Los Angeles County Natural History Museum library (213-763-3388 or 213-763-3387) is in Exposition Park, just south of campus. The library is open by appointment M-F 10:00 - 4:00.

Information on Computing

Access the **USC computer network** from several public user rooms on campus, by modem from a home computer, and from any computer connected to local networks, such as the Ethernet in the molecular biology labs. A wide array of software is on the network, and services like e-mail and database searching are free to graduate students. The **USC Computing Center** offers advice and training sessions on the network and its software. The key to this world of information is a **computer account**. Computer accounts are automatically created for all students enrolled in a degree program. To activate your computer account, complete a Web based form and create a password. Get the form from one of five public computing areas: Leavey Information Commons, KOH 200, SAL 125, or WPH B34 on the University Park Campus (UPC), or Norris Medical Library on the Health Sciences Campus (HSC).

To connect to the USC network by modem, you must install and configure PPP software on their personal computers. Free PPP software can be downloaded from public machines in UCS user rooms.

Automatic accounts are available to enrolled students two weeks before classes begin. For more please contact USC's **Customer Support Center** x05555.

Housing and Transportation

Housing

On-Campus: The USC Student Housing Office (x02546) is in Parking Structure C.

Off-Campus: Most graduate students live off-campus. Time permitting, walk or drive around a neighborhood you like, and look for vacancy signs. Some resources are *The Daily Trojan*, USC's school newspaper; the *LA Times*, Los Angeles' major newspaper; and such nearby community newspapers as the *Hollywood Press* and *Santa Monica Evening Outlook*. Also consider *The Daily Breeze* for Redondo-Hermosa-Manhattan Beach areas; the *Star News* for the Pasadena area; and the *Northeast Newspaper* for Eagle Rock, El Sereno, and East Los Angeles areas. Classified ad papers, such as *The Recycler*, have many listings. On-line, *Craigslist.org* lets you look for rentals and post rentals wanted ads. Also, the UCLA (hiss, boo) Housing Office Web site has descriptions of areas west of USC.

Consider buying a *Thomas Brothers Street Atlas of Los Angeles and Orange Counties* from the USC bookstore. Then, you can quickly locate street addresses in LA and Orange counties.

Non-University housing by campus is limited, and some areas are quite rough. Avoid renting in the south side of campus. Better is **North University Park**, north of campus, across Jefferson Blvd. Alas, the area is small, rentals are rather few, and landlords often charge accordingly. Still, you can find older places with "character" that are not too expensive. Caveat emptor.

Transportation and Parking

USC Escort Service (x0-4911): *At night, do not walk on campus alone!* The Escort Service will bring you to locations within about one mile of campus. See *SCampus* for information and schedules and Transportation Services.

USC Tram Service runs early morning until late at night on weekdays and services the nearby housing areas off campus, the Health Sciences Campus, and the campus parking lots, including the main off-campus one on Hope Street. Check transnet.usc.edu for schedules.

Despite LA's reputation, you can get by without a car.

Metropolitan Transit Authority (MTA), the LA transportation system, can usually get you from here to there and points in between.

USC's Transportation Services Office is also very helpful. The Office is at x0-3575, 1012 Childs Way, Building 1.

Express buses run from several outlying cities to downtown LA. Routes include stops at or near USC, and buses and shuttles run from downtown to USC. Transportation Services has information.

LA is constructing a new subway and rail transit system. Currently, the "**Blue Line**" runs south to Long Beach, the "**Gold Line**" runs east to Sierra Madre, and the "**Red Line**" runs west through the **Wilshire Corridor**. Wilshire Blvd. starts in downtown and extends about fifteen miles west, passing through Beverly Hills, Westwood (UCLA), and Brentwood, to the ocean at Santa Monica. Wilshire buses operate continuously.

Bicycle commuters: all bikes must be licensed--see procedures in *Scampus*. Unlocked bikes on or near campus will likely be stolen. Try to keep your bike in your apartment and in your office or lab.

Car commuters: a **USC Parking Permit**, available via the Transportation Office, is a wise investment. **Off-campus street parking** is scarce and unsafe; plus, parking time restrictions are the rule. Wherever you park, always lock your car and leave nothing valuable (cd player, clothes, etc.) visible from the outside.

Car and Vanpooling: LA County sponsors "**Commuter Computer**," a service to help commuters form car pools. If you wish to carpool, submit your name and commuting schedule to the "Commuter Computer," 213/380-RIDE. They will try to match you with other interested commuters. "**Rideshare**" is USC's on-campus car and vanpooling service. Rideshare operates out of the Transportation Services Office.

Banking and Shopping

Across from campus are a **Citibank** on Vermont Ave. and a **Bank of America** on Jefferson Blvd. After dark, never go to an ATM alone. Neighborhoods around USC are not particularly safe.

The on campus **USC Federal Credit Union** (KOH 200) offers good deals on checking and savings accounts and loans. Their ATMs are by the USC Bookstore, in the Commons Lobby, and in Kings Hall.

Bookstores

USC Bookstore/Computer Store on campus and The Paper Clip in University Village are convenient places to buy school and computer supplies. MEB graduate students are entitled to a 10% discount on some items in both stores. The graduate student sticker, which provides Bookstore discounts, will be put in your mailbox.

Local Markets

The 32nd Street Market in University Village will cash personal checks if you have a California Driver's License. Through them, you can also send telegrams, mail packages, and purchase money orders. **Smart and Final**, across from USC on Vermont Ave., has bulk foods and janitorial supplies at a discount. **Ralph's Supermarket**, at Vermont Ave. and Adams Blvd., is a mile north of campus.

Dept. of Motor Vehicles

The California Department of Motor Vehicles (DMV) is two blocks east of USC (3615 S. Hope Street).

Personal Life *USC and Los Angeles*

On-Campus Cultural Events and Recreation

Get ready for plays, concerts, films, and art exhibits. Oh, and sports. USC is gung-ho about its sports teams. Sure, going gaga over a football game is intellectually questionable, but the game against cross-town rival UCLA is worth experiencing once. If you plan to attend many USC sports events, buy a "Student Activity Card" during registration week. The Card is essentially a season ticket to all USC home games and gives you a chance to buy a Rose Bowl football ticket if USC plays in it.

The **Lyon Center** has a weight room, racquetball courts, stationary bikes and treadmills. Locker rooms also lead to the **McDonald's Olympic Swim Stadium**. Nearby tennis courts and a track and soccer field are generally open to students. Students can form teams for intramural leagues in basketball, softball, coed water polo, and coed volleyball. Entrance and basic use of USC's athletic facilities are free to students with current ID.

Off-campus Activities

Southern California cultural and recreational areas are quite accessible from USC. In a few hours at most, you can reach all manner of museums, theaters, sports complexes, amusement parks, zoos, bowling alleys, pool halls, ice skating rinks, beaches, tide pools, mountains, deserts, islands, public parks, horseback riding trails, polo fields, ski areas, golf courses, tennis courts, etc. Geez, what more do you want?

A sampling of what awaits:

amusement parks: Disneyland, Magic Mountain

art museums: LA County art museums, J. Paul Getty museum

ethnic museums: Museum of Tolerance, the California Afro-American Museum

science museums: Museums of Natural History and of Science and Industry, the Page Museum & La Brea Tar Pits

classical music: Music Center, Hollywood Bowl

rock music: Greek Theater and Universal Amphitheater

classic theater and musicals: Shubert and Ahmanson theaters

first-run contemporary works: Mark Taper Forum and lots of small local theaters

zoos: Los Angeles, San Diego

aquariums: Long Beach, Sea World

horse racing: Hollywood Park, Santa Anita

Hiking: Topanga State Park, Will Rogers State Park, Griffith Park

pro sports: baseball: Dodgers; hockey: Kings; basketball: Lakers, Clippers

Hancock Park area

On Wilshire near Fairfax Avenue

Los Angeles Museum of Art

Page Museum and La Brea Tar Pits

Petersen Automotive Museum

Exposition Park

On Exposition Blvd., directly across from campus

Museum of Natural History

California Science Center

Aerospace museum

LA Sports Arena

LA Coliseum

Rose Garden

Swimming Center

Griffith Park

Perhaps the largest municipal park in the U.S.

Observatory and planetarium

Greek Theatre, a natural amphitheatre for concerts

Merry Go Round

Autry Museum of Western Heritage

Los Angeles Zoo

Golf Course

Santa Catalina Island: MEB has ties to a marine research lab in Big Fisherman Cove at Two Harbors. A Wrigley Institute boat runs on Mondays and Thursdays. It's free! An Express boat runs more often, depending on the season, and costs about \$48 roundtrip. For the Wrigley boat, contact Ann Close in AHF. For the Express, check the Catalina Express schedule, and look at the San Pedro to Two Harbors route. To stay overnight, contact Katie Boutillier of Wrigley.

Warnings**Fun in the Sun**

Although the sun is fun, you must protect your skin. Sunscreen with a minimum 30 SPF rating is not enough. For any extended exposure, cover up with a brimmed hat, long sleeves, and pants. Skin cancer due to sun exposure is epidemic in Southern California, as is looking like a dried up prune. Protect yourself.

West Nile Virus, Avian Flu, and Lyme Disease

These are potentially devastating diseases. Mosquitoes spread West Nile; ticks spread Lyme Disease. If you hike or play in a park--even a city park--wear insect repellent and clothe your skin and hair. Also, stay on trails cleared to help keep the tiny critters off of you. Back at home, check your skin for any freeloaders digging in, and wash clothes in hot water. Stay away from all dead birds, especially the big black ones. Call the Public Health Department to report dead bird sightings. When in doubt, visit the USC Health Center.

General Information about Financial Aid

Marine Environmental Biology Section intends to provide or arrange for the provision of financial support (stipend + tuition) for all of its Ph.D. students. Students should feel assured that the faculty will do everything possible to meet this goal. Please note that Graduate School rules prohibit full time student from accepting any employment above and beyond their graduate assistantships (see Graduate Assistantship Handbook). There are 4 main sources of support for graduate students: Teaching Assistantships, Research Assistantships, Training Grants, and Individual Fellowships and Grants.

1) Teaching Assistantships

We are fortunate to be part of a large undergraduate department, because this gives us access to many TAs. The exact number varies with enrollments, but is divided equally between the 3 research sections. TAs, which are generally awarded for an academic year, carry a stipend and full tuition remission. You must maintain at least a 3.0 GPA to receive the tuition remission. Ten monthly payments are made beginning August 26 and ending May 26. It is possible to arrange for payments to begin August 26 (for a total of ten payments). See Linda Bazilian for more information. The authority to offer TAs rests exclusively with the Biological Sciences Department Chair, Dr. David Caron. He consults extensively with the Graduate Admissions Committees of each of the sections, and with faculty instructors.

The workload associated with TAs varies with the course in question and the familiarity of the TA with the subject matter. Consult a few of the more advanced graduate students for tips on course selection. Keep in mind that the best way to learn a subject in detail is to attempt to teach it to someone else. Whatever course you are assigned, please take your responsibilities very seriously. You are under a moral and legal obligation to do your best for your students. Undergraduates pay a hefty tuition bill, so they are entitled to your best efforts. Learn the subject matter diligently and find creative ways to explain it. Practice your verbal communication skills. Make yourself available and approachable. Conform to high ethical standards and respect confidentiality of your position. All of these skills will be directly useful to you in your future careers as researchers and educators. We faculty view the TAs as an important part of your training. Please be aware that as with any other job, your TA position can be terminated for poor performance.

2) Research Assistantships

Research Assistants and TAs are paid on the same scale and receive identical benefits. Nine monthly payments are made beginning September 26 and ending May 26. The department funds TAs, and research grants of individual faculty fund RAs. As the name implies, RAs do research, usually directed the Specific Aims of the grant that funds the position. The time required is often more than that for a TA, but this is usually not considered a burden because the work should be directly relevant to your research training. At a minimum, an RA should be considered a 15-20 hour per week job. Students might opt to put in more time, depending on the relationship between RA duties and the dissertation project, or the likelihood of co-authoring resulting publications. The relation between the RA project and the dissertation project varies on the faculty member involved and other circumstances. In some cases, the two projects are the same and you will in effect be paid for doing your dissertation research. In others, efforts are made to keep the projects distinctly different. Good arguments can be made for either approach.

Research assistantships need to be cultivated. Try to identify your research interests as early as possible, certainly by the end of your second semester. Determine which professor best matches those interests. If necessary, do some reading to educate yourself about that professor's work and the field in general. Tell the professor you would like to work with him or her and inquire about the availability of RAs. Before you start an RA, be sure you understand what is expected of you, what you can expect from the professor, and what relations might exist between your work and dissertation research.

TAs vs. RAs: Your teaching assistant experience can be very rewarding. You will learn a lot and have the satisfaction of seeing that knowledge take root in others. You may establish lasting friendships or mentor relationships with some of your students. On the other hand, you are primarily here to do research, not teach. If you are not very efficient in organizing your time, progress on your dissertation research may be slowed by extended service as a TA. Most agree that RAs are preferable. Try to be flexible, though. As grant budgets wax and wane, it may be necessary to RAs to take TAs to cover lean periods.

The Wrigley Institute has just created a series of RAs for working at Catalina. Fellowships are available for the Summer, as well as for the Academic year.

3) Individual Fellowships and Grants

An enormous number of grants and financial aid are available to students. Detailed information can be obtained from two sources. First, the Graduate School (GFS 315, x35179) has a partial listing of available grants. Second, there is a computerized database in Doheny Library (DHL reference section). This database contains literally hundreds of grants from which to choose.

4) Summer Support

Your decision to be a Ph.D. student is a year-round commitment. You should view the summer as an opportunity to engage intensively in research, free from the distractions of coursework, TA assignments, and the like. We expect you to be in the laboratories, engaged in full time research, every summer. We will do everything we can to provide the financial support to make this possible. Please be aware, however, that it is your responsibility to take the initiative in securing summer positions. Early in the spring semester, if not earlier, every new student should make at least a tentative decision about which laboratory to work in. Talk to that professor and see if support is available. The best plan would be to secure a RAship, although there are a few summer TAships available. These provide only partial support and you must put your bid in early to Don Bingham. If these possibilities don't work out, see Linda Bazilian or Doug Capone. They may be aware of other possibilities for summer funding.

REQUIREMENTS AND POLICIES GOVERNING THE GRADUATE PROGRAM IN MARINE ENVIRONMENTAL BIOLOGY

Revised August, 2005

The Graduate Program in Marine Environmental Biology & its Administration

Introduction

Graduate students in the Graduate Program in Marine Environmental (referred to subsequently as "GPMEB" or the "Program") may pursue a Ph.D. degree.

At the University of Southern California, graduate education is the responsibility of the Department, but the University's Graduate School establishes minimum requirements concerning grade point average, number and distribution of units, residency, time limits, etc. that are common to all advanced degrees offered within the College of Letters, Arts and Sciences at the University. Specific courses, examinations, skills, and research requirements are established by the student's program of study, in this case the Graduate Program in Marine Environmental Biology. Collectively, both sets of regulations constitute the student's "degree requirements," all of which must be met by the student.

Graduate School regulations are listed in the current *University of Southern California Catalogue* somewhat confusingly, one part of these are scattered in the section on "Academic Policies and Information" near the beginning of the *USC Catalogue* and the rest are found near the middle of the *USC Catalogue* under "The Graduate School." Those regulations, which most commonly affect GPMEB students, are included in this document, but this listing should not be considered definitive.

GPMEB regulations are listed in this document; the major requirements of degrees in the GPMEB are also listed in the *USC Catalogue* under "Department of Biological Sciences."

Program Administration--The Graduate School

The Graduate School maintains the University's official Permanent Graduate Student File and is ultimately responsible for admission of our graduate students and the awarding of their degrees. As noted above the Graduate School establishes requirements concerning grade point average, number and distribution of units, residency, and time limits that are common to advanced degree programs in all units under their jurisdiction, including the Department of Biological Sciences.

Official forms are used to track a student's progress by The Graduate School and completion and submittal of these usually is to be at a specified point in the student's tenure. Timetables for the completion of degree requirements are available at The Graduate School. The schedule for the Ph.D. student's final and penultimate semesters are especially detailed and need to be adhered to closely.

All Graduate School forms prepared by or on behalf of the student must be approved by the Director of the Program and by the Chair of the Department before their submittal to the Graduate School. All Graduate School forms are available from the Graduate Student Coordinator, Linda Bazilian.

Graduate Student Representatives

In late spring, GPMEB students select two graduate students to serve as Graduate Student Representative and Alternate Graduate Student Representative for the coming academic year. To be eligible for the posts, both students must have passed their Qualifying Examination. The Alternate will represent the graduate students in the Graduate Student Representative's absence or by the latter's appointment. The Graduate Student Representative has one vote in meetings of the GPMEB Faculty representing the opinions of the graduate students.

The Graduate Student Representative has no voting power in either the continuation of fellow graduate students or in the Qualifying Examination. At the option of the student examined, the Graduate Student Representative may also be present during the oral part of the Qualifying Examination.

Graduate Student Coordinator of GPMEB

The Graduate Student Coordinator of GPMEB is the staff member responsible for processing and maintaining graduate student files; serving as liaison between the students, GPMEB Faculty, and the Graduate School; and making available application materials, Graduate School Forms, and other relevant documents. A permanent Department file on each student is maintained in the Marine Environmental Biology Program Office.

Student Advisement and Guidance

The First Year Advisor; Initial Advisement and Evaluation by Student's Advisor

Most students have a first-year advisor who is identified in the acceptance letter. This initial advisor may be replaced by another faculty member with whom the student has closer research affiliations at the request of the student and with the approval of the new advisor. If an incoming student has not chosen an advisor, this should be a priority during the first semester.

The Program provides an initial orientation for all incoming students. During registration week of a graduate student's first semester, the student's initial advisor meets with the student to review his/her previous course work and experiences and to discuss career objectives. A primary purpose of this initial interview is to identify major deficiencies in a student's preparation and to suggest means of remedying any such deficiencies.

Screening Committee

A Screening Committee is created each year and consists of the members of the admissions committee plus the student's advisor. This committee will meet with incoming students as soon as possible to evaluate the student's background and make recommendations for developing a solid base in marine biology. They will administer the Screening Examination, which is given near the end of the student's second semester of graduate work at USC. The Screening Committee will also be responsible for the student's advisement and guidance from the time of its appointment until the five-member Ph.D. Guidance Committee is established. Each student's performance will be reported in writing on the GPMEB's *Report of the Screening Committee*.

Requirements for the Ph.D. Degree

Time Schedule

All course requirements for the Ph.D. degree are normally completed within three calendar years from the date on which the student took his/her first course at USC and must be completed within eight calendar years from that time.

General Requirements

A total of 60 units must be completed for the Ph.D. Degree.

Course Requirements--Core courses

Two core courses are currently required: BISC 582 and BISC 584. These courses should be taken during the student's first year at USC. Students are also required to take 4 units of BISC 529 (MEB Seminar).

Students must receive a grade of B or better in each core class and maintain a cumulative 3.0 Grade Point Average in all coursework.

Official Guidance Committees

A five-person Ph.D. Guidance Committee should be established soon after the screening exam, but no later than the fourth semester of enrollment for a student seeking a Ph.D. degree. After the student passes the Qualifying Examination, the Ph.D. Guidance Committee is called the Dissertation Committee.

The Student and His/Her Responsibilities

The student is ultimately responsible for his/her graduate career and must be familiar with Graduate School and GPMEB requirements and responsible for their timely completion.

If a student's needs are not being met, he/she should seek redress, using the following chain of command: advisor, advisory committee (screening, guidance, dissertation), Director of the Program, Department Chair, and Graduate School.

In addition to all other rules, the University has established codes of conduct to which all students must adhere. One aspect of graduate training -- service as a teaching assistant -- places them in a position of power over undergraduate students. The position implies added responsibilities and liabilities, especially in respect to such matters as fairness, equal treatment, sexual harassment, etc. Information on University policies concerning conduct is available in *SCampus*. Further information or sources of information may be obtained from the Department office.

Formal Graduate Seminars

Students must complete a minimum of four (4) 2-unit graduate seminars. Because a critical feature of such seminars is exposure to current literature, all four required seminars must be completed during the student's tenure at USC. With the written permission of the student's committee, a formal course completed at another institution may be counted as one of the four required seminars (the course must have been completed during the student's tenure here, however).

Research Tool Requirement

Proficiency in statistics is a necessary skill for all scientists. Satisfactory skill level may be demonstrated by

- a) completion (grade of B or better) of a course approved by majority vote of the Marine Environmental Biology Program faculty.
- b) acceptance of course work previously completed either at USC or elsewhere. The acceptability of a previously completed course will be made by an examiner selected by the Marine Environmental Biology Program faculty.

A rigorous grad level course in Biostatistics is available at the Medical School in the Department of Preventive Medicine. Course number is PM 510L. Permission is needed from the PM Department. A free shuttle bus runs routinely between the University Park and Med School Campuses. Other BioStat options are listed in the appendix.

Research Units

BISC 790 Research units are normally taken whenever the student is conducting his/her doctoral research. Dissertation research will normally take the equivalent of about 2.5-3 years of full time work, but the number of research units taken usually does not reflect this. Typically advanced graduate students will take 6 units of 790 and possibly a 2-unit seminar each semester.

Grade Point Average Requirements

Students must maintain a grade point average of at least 3.0 in all courses taken at USC, in conformity with regulations of the Graduate School; work graded C- or below is not acceptable for either subject or unit credit. In addition to the overall GPA requirement, students must achieve at least a B- in each core and skill course.

If a student's cumulative grade point average falls below 3.0 at any time, the student will be placed on departmental academic probation. The cumulative average must be raised to 3.0 by the completion of the next two semesters of registration at USC in courses approved by the student's guidance committee. Note: this may require that the student take additional formal and/or seminar courses since directed research and dissertation units are on a Pass/No Pass basis and are not computed into the GPA. If the student does not improve his/her overall GPA to 3.0 within this period, the student will be dropped from the program. A student who has been removed from probation but subsequently fails to meet the scholarship requirement is subject to termination (will be terminated) from the program.

Marine Program Noon Seminar Series

Students must regularly attend the Marine Environmental Biology Noon Seminar series throughout their tenure at USC. In addition to attending other seminars, each student presents a 30-minute seminar on his/her current research once each academic year, beginning in their second year. Attending faculty will provide short written evaluations of the seminar to help students improve their public speaking skills. (See "Forms" section).

BISC 794 Doctoral Dissertation

After a student successfully completes the Qualifying Examination and is therefore a formal candidate for the Ph.D., he/she must register for BISC 794 Doctoral Dissertation each semester except summer. The student would sequentially register for BISC 794a, 794b, 794c, 794d in the first four semesters after completing the Qualifying Examination, and then BISC 794z each subsequent semester as needed. Students must have at least 4 units of 794 credit, but can receive no more than 8; hence BISC 794a-794d are valued at 2 units and BISC 794z at 0 units.

Other Course and Unit Requirements

Additional formal course requirements may be established by the Section and/or by the student's guidance committee and/or on advice of the committee, which evaluates the student's preparation in the Screening Examination.

The minimum number of units required for the Ph.D. by the Graduate School is 60. Units must include 4, but no more than 8, units of BISC 794 credit and may be completed with other formal classes or BISC 790 work.

The student must be registered at USC during the semester that the dissertation is submitted.

Teaching Assistantship Requirement

Graduate students pursuing the Ph.D. in the GPMEB must serve as a teaching assistant for at least two semesters; ideally, the student should serve in at least two different courses.

Screening Examination

The Graduate School requires a Screening Examination. The exam is oral, about one hour in length, and must be taken before the student has completed 24 units of graduate work at USC. The Screening Committee administers the exam. The purpose of the meeting will be to evaluate the student's preparation, determine competence to continue graduate study, and point out deficiencies to be remedied prior to the Qualifying Examination. Prior to the exam, the student submits a 1-2 page document outlining his/her activities during the previous year and present research interests. At the exam, the student presents a short (5-10 minute) description of their academic background and research interests.

The topics covered in the Screening Examination include:

- a summary by the student of their research while at USC
- biotic diversity, classification, and life histories
- organismal evolution and phylogeny; molecular evolution
- structure and physiology of cells and organisms
- biochemistry
- Mendelian, population, and molecular genetics
- biological, chemical, and physical oceanography
- statistics, experimental design, modeling and theoretical biology
- ecology and environmental sciences.

Each student's performance will be reported in writing to the student. A copy is placed in the student's file.

Guidance Committee

Composition of the Guidance Committee

The student's program of studies is under the direction of a five-member guidance committee that must be established at least two semesters before the student takes his/her Qualifying Examination. Therefore, the student should request appointment of the committee as soon as possible after the screening exam but certainly before the end of his/her third or fourth semester of enrollment in the Ph.D. program.

The composition of the guidance committee must meet the following guidelines:

- a) One member of the committee must be from a department at USC other than Biological Sciences. This "outside member" serves as the representative of the Dean of Graduate School.
- b) Normally, the other four members of the committee are tenure-track faculty of the Marine Environmental Program in the Department of Biological Sciences, but one of the members may be from another Program in Biological Sciences, and at least one must be tenured. The chair of the committee is called the student's advisor and must be from the Marine Environmental Program. Co-Chairs are normally not permitted unless required by the Graduate School (see next paragraph).

In exceptional cases of academic merit, a person not meeting the above guidelines may be approved by the Graduate School to serve on a Ph.D. committee. To request such an exception, the student must submit to the Graduate School a current Curriculum vitae of the proposed member and a letter from the chair of the committee citing the particular expertise of the person and the relevance of the requested appointment. A specially approved member may not serve as the outside member (see below) or as sole chair of the committee, but may serve as a co-chair with a regular faculty member of the Marine Environmental program. A guidance committee may include no more than one specially approved member unless the size of the committee is enlarged past five.

Request for changes in the composition of the Guidance Committee must be made in writing by the student to the Program. If approved, the committee is officially changed using the Graduate School's **Request for Change of Committee** form.

If the chair of the Guidance Committee will be absent from campus for any extended period of time (e.g., on leave) (s)he must appoint a temporary chair. The permanent chair will continue as a member of the Committee during his/her absence and will be in communication with the Guidance Committee. If the permanent chair must be absent at the time of the Qualifying Examination or the defense of the dissertation, a petition for formal appointment of a temporary chair must be submitted to the Graduate School.

Responsibilities of the Guidance Committee

The Guidance Committee (as such or as the Dissertation Committee that it becomes) is responsible for the guidance and evaluation of the student during his/her graduate tenure. Specific responsibilities include:

- a. Administration and evaluation of the Qualifying Examination.
- b. Approval of the student's research and academic programs.
- c. Monitoring the student's temporal progress in meeting degree deadlines.
- d. Evaluation of the dissertation in the Oral Defense

To meet these responsibilities, the Committee may require the student to make periodic written reports and should meet at least once per year with the student (one appropriate time for an annual meeting is shortly after the student's presentation at the Marine Noon Seminar series). More frequent meetings are usually necessary as the student approaches completion of his/her degree work. The student or any member of the committee may request a meeting. Normally the student is responsible for arranging a specific date, time and place for meetings. The Chair should write minutes of all committee meetings and submit one copy each to the student, the members of the committee, and the Marine Program office for inclusion in the student's permanent file.

Qualifying Examination

Prerequisites for the Qualifying Examination

During the semester the exam is taken, the student must be enrolled in a departmental graduate course or GRSC 800. The GPMEB requires that students have completed:

- a) All required core courses, each with a minimum grade of B-.
- b) At least two graduate seminars.
- c) The statistics research tool requirement.
- e) Removal of inadequacies noted in the screening examination.
- f) Completion of the **Request to Take Qualifying Examination** form.

Depending on how the above requirements were met, the student may have to take additional course work to satisfy the Graduate School requirements that students have completed at least 24 units of course work applicable to the degree while in residence and with a minimum cumulative GPA of 3.0.

Timing of the Qualifying Examination

The Qualifying Examination is normally taken during the student's fifth semester in the Ph.D. Program and must be taken before completion of his/her sixth semester.

Components of the Qualifying Examination

The Qualifying Examination consists of a written and an oral part. The student's Guidance Committee conducts and evaluates both parts.

The Written Examination

The written examination will consist of four or five sets of questions distributed over two consecutive days. This examination can be taken on a laptop computer supplied by the committee chair (i.e., the student cannot use their own computer). Each Guidance Committee member (with the possible exception of the "outside member" whose participation is optional here) submits three questions; the student must answer two of this set, spending about equal time on each and having a maximum of two hours per set. The order in which the sets of questions are taken is at the student's option.

Questions will be comprehensive in scope with respect to the student's chosen area of specialization and will be designed to test the student's conceptual, analytical and integrative ability and preparation.

Each member of the Examination Committee will grade his/her question on a scale of 1.0-5.0 using 0.5 unit steps if necessary (1.0 as poor and 5.0 as exceptional). The examination result will be calculated by averaging all the grades. A mean score of 3.3 or above for all questions is passing; below 3.0 is failing. Cases where the mean is between 3.0 and 3.3 or where two or more questions are graded below 3.0 are evaluated by the Guidance Committee followed by a vote, using a secret ballot. More than one negative vote of the Guidance Committee will result in failure of the student to pass the written examination.

The written part of the Qualifying Examination must be taken before (normally 2 weeks before) the oral examination described below. The results of the written examination and the oral examination are given only at the completion of the oral examination.

The Research Proposition (The Fifteen Pager) and its Preliminary Approval

Proposition Abstract

At least two months before the anticipated date of the oral examination, the student should meet with his/her Guidance Committee and provide them with a 1- or 2-page Research Abstract of the anticipated research program to be presented in the Research Proposition. The purpose of this meeting is to ascertain whether the anticipated research constitutes a defensible dissertation topic so that the student does not develop a detailed plan for a research program that has serious flaws and probably cannot be successfully defended in the oral examination. If the committee has reservations, modifications that are mutually satisfactory to the student and the committee can be worked out during this meeting or the student can be asked to submit a revised or new abstract.

Upon approval of the Proposition Abstract by the Guidance Committee, the student will develop it into a formal Written Proposition. This is to be in the form of a grant proposal and should include a short historical introduction, a statement of the problem and its significance, one or more hypotheses (if appropriate), the research design, anticipated results, methods to be used in interpretation of the results, and pertinent references. The treatment should be concise and should not exceed 15 double-spaced pages.

The Oral Examination

The oral examination will be in the area of the student's intended research and will be based on a research project selected and developed by the student into a Research Proposition.

The oral examination is usually taken two weeks after and must be taken within one month of the written examination. At least two weeks before the date of the oral examination, the student must submit one copy of the Research Proposition to each member of the Examination Committee and one copy to the Marine Program's Student Affairs Administrator for the student's permanent file.

The oral examination will be conducted and evaluated by the student's full 5-member Guidance Committee. Typically, the Committee meets briefly without the student to review the student's course work, other preparation and progress; to review the student's performance on the screening examination (copies of the student's transcript and Screening examination report should be obtained for each committee member from the Graduate Student Administrator by the Chair); and to agree on the exact format and order of questioning during the oral examination. Subsequently, the student typically presents the highlights of the research proposition in 15 minutes or less. Then members of the committee ask two or more rounds of questions. The questions are largely focused on the student's ability to conceive, conduct, evaluate of independent research and to communicate the results of such work. However, the oral examination is not limited to the context of the Written Proposition; as specific examples, questions are often asked a) from the written examination and b) concerning the removal of deficiencies identified during the Screening Examination.

On completion of the examination, the Guidance Committee meets in executive session (without the student) to evaluate the student's performance on the oral examination. Each member has one vote, pass or fail. More than one negative vote will result in failure of the student to pass the examination.

At the end of the executive session, the student is notified of the results on the two portions of the Qualifying Examination. Although one could pass both the oral and writtens, only one of these exams, or neither, the student passes the Qualifying Examination (as a whole) only if his/her performances on both the written and oral portions are satisfactory. If the student passes both the oral and written examinations, he/she is indicated to have passed the Qualifying Examination on the Graduate School form **Report on Ph.D. Qualifying Examination**.

If the student fails the written examination or the oral examination or both, the committee must indicate that the student failed the Qualifying Examination on the Graduate School form **Report on Ph.D. Qualifying Examination**. The committee must make recommendations concerning the student's continuation in the graduate program. The committee usually grants the student a second chance to pass the failed portions (either part satisfactorily completed in the first examination does not have to be retaken), but may recommend that the student not repeat the exam or even deny a second chance (the latter action would be appealed to the Graduate School). The second attempt is a final one and can be taken no sooner than six months or later than twelve months after the initial failure.

Admission to Candidacy

After the student passes the Qualifying Examination, the Guidance Committee recommends to the Graduate School that the student be admitted to candidacy for the Ph.D. Degree. Following admission to candidacy the student must register for BISC 794 Dissertation every semester, except summers, until the degree is awarded.

After the Qualifying Examination has been passed, the full Guidance Committee will be known as the Dissertation Committee. The GPMEB does not allow the reduction of the Guidance Committee to a three-member Dissertation Committee as permitted by the Graduate School except under special circumstances. If these circumstances are met, at least 2 members must be from the GPMEB). Participation of all members of the Guidance Committee in the Dissertation Committee is indicated on the bottom of the form, **Report on Ph.D. Qualifying Examination**.

Research

A student must undertake original investigation of a selected problem in marine biology or biological oceanography. This is normally based on the Written Proposition as presented in the Qualifying Examination, subject to acceptance by the student's committee. Subsequent changes of research direction or content must have advance approval by the student's advisor and Dissertation Committee.

Research Prior to Admission to Candidacy

Although the Graduate School regulations indicate that students cannot pursue research prior to their admission to candidacy, students in the GPMEB are encouraged to conduct research at their earliest opportunity. Ideally, this early research will develop into an appropriate dissertation topic. Certainly, the student will find it difficult to develop and defend a Research Proposition without significant exposure to research in general and the specific problem in particular. Such preliminary research should be based on a detailed plan prepared by the student and approved by his/her advisor.

Research Subsequent to Admission to Candidacy and its Relationship to the Written Proposition

As noted above, dissertation research is normally based on the Written Proposition as presented in the Qualifying Examination, subject to its acceptance by the student's committee. Difficulties frequently force revision of the planned study. The student's Dissertation Committee must approve in advance any such changes of research direction or content.

Publication Prior to Submittal of the Dissertation

Prompt publication of research results is very strongly encouraged in the GPMEB. Students should organize their research efforts into blocks that a) can be completed in sequence, and b) represent topics for separate future papers so that submittal of one or more papers can be completed during their graduate tenure. Advisors often require students to submit one or more papers before completing their dissertation.

Authorship of such papers is significant. If the student is the sole author or if the student is the first author with the advisor as the only additional author, it implies that the student did most if not all of the research and hence the entire contents of the paper may be acceptable for incorporation into the dissertation. If the advisor contributed significantly to the research or if other individuals (other graduate students, faculty, post docs, research technicians, etc.) are co-authors, only that part of the paper which represents the student's work may be incorporated into the student's dissertation.

A published work may be incorporated into the body of the dissertation but may not be appended in the form of a reprint according to Graduate School regulations. The student is advised to seek the approval of the dissertation committee before submittal of a manuscript that is to be included in the dissertation since that committee must ultimately approve all contents of the dissertation. The fact that material has been submitted (accepted, published) does not mean that it will be allowed to be incorporated without revision by the committee.

Preparation and Defense of the Dissertation

A dissertation represents a significant contribution to science that is based on an original research program completed by the student. Determination of the adequacy of the research program is the sole responsibility of the student's Dissertation Committee. Approval of the dissertation itself is primarily the responsibility of the student's Dissertation Committee, but the completed dissertation must also be examined by the Thesis Editor of the Graduate School to determine if it meets the grammatical standards and other requirements described in *Regulations for Format and Presentation of Theses and Dissertations* published by the University of Southern California and available at the University Bookstore. Additional regulations and information on the organization and preparation of the dissertation are provided in *Directions for Preparation of Dissertations and Research Reports as Required by the Graduate Program in Biology/University of Southern California*. Students should obtain a copy of both sets of regulations before they initiate their writing.

GPMEB students defend an advanced draft of the dissertation rather than a "final" copy typed on dissertation paper. The advanced draft should be complete, including all text, figures, tables, references, etc. and the draft must be in a suitable form for final typing. Before assembly of a complete draft is initiated, the student should confer with his/her full committee to determine whether adequate research has been completed.

The student's advisor is the individual responsible for determining whether or not a draft is sufficiently refined for distribution to the full Dissertation Committee. Portions or all of earlier drafts may be submitted to some or all of the committee members for suggestions and evaluation at any time. The thesis draft to be defended must be given to the Dissertation Committee at least one month prior to the thesis defense date.

Presentation and oral defenses of the dissertation are achieved in a formal seminar open to all members of the academic community and in a closed meeting of the student and the Dissertation Committee.

Since the final typed copy of the dissertation must be presented to the Office of University Publications at least three weeks prior to the end of the term in which the degree is to be granted and since the student must allow adequate time after the defense for corrections and final typing, the defense should be scheduled at least six weeks before the end of the term in which the student plans to graduate.

Before undertaking the Dissertation Defense, the student must have completed (or be in progress of completing) all other degree requirements.

The Chair of the Dissertation Committee is required to notify the Student Affairs Administrator of the Marine Program of the date, time, and place of the defense of the dissertation, so that a notice of the Dissertation Seminar and Defense may be distributed to all faculty and graduate students of the Department at least two weeks in advance. The date selected for this defense cannot be on an official University holiday (e.g., Labor Day, President's Day, etc.).

The open oral defense of the dissertation is achieved in a formal 50-minute "research" seminar such as would be given by a visiting scholar. The presentation is open to the public and the student should be prepared to answer all questions from members of the audience, including those on the Dissertation Committee. The period of questioning is not to be limited in time.

The dissertation is also subject to a detailed defense made before the full Dissertation Committee in a meeting that is usually held shortly after the conclusions of the seminar. At this meeting, which is typically two-three hours in length, the Dissertation Committee must critically evaluate the dissertation and determine whether or not it is to be accepted. To be acceptable, the dissertation must represent a major, original contribution to science.

Only members of the Dissertation Committee may vote whether to pass or fail the student (accept or reject the dissertation and its open defense in the seminar). A vote to pass the student must be unanimous and such a vote does not preclude that the committee may require modifications of the dissertation. Reasons for failure of the defense should be clearly identified by the committee and may include a) a flawed research plan, b) nonconclusive or inadequate research results, c) major deficiencies in the dissertation, etc. A student who fails the defense the first time is normally given a second opportunity, but any decision on re-examination is at the discretion of the Dissertation Committee.

If the defense is satisfactory and no major revisions of the dissertation are required, all members of the Dissertation Committee sign the **APPROVAL of DISSERTATION for FINAL TYPING** (green card), which is submitted to the Graduate School. If significant revisions of the manuscript are required, the card is not signed until such revisions are completed. The Chair of the Dissertation Committee may be assigned full responsibility for determining that the required revisions have been made, but some or all other members of the committee may request that they also be involved in the final approval.

If the green card for final typing is signed and dated by the drop/add deadline for FALL or SPRING, no further registration is required.

The student also needs to prepare an abstract of the dissertation for publication in "*Dissertation Abstracts, International*." The **DOCTORAL DISSERTATION ABSTRACT SUBMITTAL** form, signed by the Dissertation Committee chair, must be attached to the abstract and submitted to the Thesis Editor of the Graduate School.

The **SIGNATURE PAGE** is bound with the dissertation to verify that the dissertation has been approved by the Committee and accepted by the Graduate School. Signatures required on this form are those of the Committee and the Graduate School.

In addition to the original copy required by the Graduate School, one hardbound copy of the dissertation must be presented to the Department of Biological Sciences and another to the chair of the student's (Guidance and) Dissertation Committee.

The **TRIPLE CARD REPORT ON DISSERTATION & ORAL EXAMINATION for the Ph.D. DEGREE** must be signed by each Committee member, the Chair of the Department of Biological Sciences, the Thesis Editor, and the Graduation Counselor (for Dean of Registration & Records, GFS 315). The signed **TRIPLE CARD REPORT** signifies approval of the dissertation and defense by the committee, as well as acknowledging completion of all departmental degree requirements and all University degree requirements. Most important of all, it indicates that the degree has been cleared for conferral. The completed **TRIPLE CARD REPORT** is submitted to the Graduate School for approval.

The student must pay a Dissertation Fee for the microfilming and binding of the dissertation and publication of the abstract (see Tuition and Fees in the current University "*Catalogue*"). A copy of the receipt for payment of this fee must be submitted to the Thesis Editor.

The **DIPLOMA APPLICATION CARD FOR GRADUATE STUDENTS** notifies Registration and Records of how the student would like his/her name to appear on the diploma. This card must be completed and submitted to the Graduate School.

The **SURVEY OF EARNED DOCTORATES** must be completed and returned to the Graduate School for approval.

After approval by the Graduate School, the completed **TRIPLE CARD** is taken to the Degree Progress Department (SAS 010). Once this Department has signed the card, you have officially graduated!

COURSES AVAILABLE IN MARINE ENVIRONMENTAL BIOLOGY

BISC 582 Biological Oceanography (Core Course) - each Fall (Fuhrman & Capone)
(4 units)

BISC 584 Faculty Lecture Series - each Spring (all MEB Faculty)
(2 units)

BISC 585 Scientific Writing and Reviewing - each Spring (Caron & Michaels)
(2 units)

BISC 529 Marine Environmental Biology Seminar
(1 unit; 4 units required, maximum)

Advanced Seminars (Offered on a rotating basis; check current Schedule of Classes)
(2 units; 8 units required)

530	Advanced Seminar in Plankton Biology (2 units) (Caron & Michaels)	Fall 04	
531	Advanced Seminar in Physiology of Marine Organisms (2 units) (Gracey)	Fall 05	
532	Advanced Seminar in Molecular and Microbial Ecology (2 units) (Fuhrman)	Spr 04	
533	Advanced Seminar in Remote Sensing (2 units) (Kiefer)	Spr 06	
534	Advanced Seminar in Population Genetics (2 units) (Edmands & Hedgecock)	Fall 03	Fall 07
	or Seminar in Quantitative Traits (2 Units) (Hedgecock)	Spr 04	
536	Advanced Seminar in Marine Biogeochemistry & Microbial Ecology (2 units) (Capone & Ziebis)	Spr 04	

'Quick Check List' of Student/Advisor Responsibilities

First Month (Late Summer/Early Fall; ASAP, before classes get going)

Each student meets with the "Screening Committee" (same composition as the Admissions Committee for that year, plus the student's advisor). This committee will be the same one that administers the Screening Exam at the end of Year 1. The Screening Committee evaluates each student's background and advises on courses to be taken in the first 1/2 years to develop each student's background in marine science (and specific area of interest).

By the End of Year 1 (Summer)

Student completes the Screening Exam, which tests the student's general scientific knowledge, and identifies weaknesses that need to be addressed. The student will receive written comments from the committee on the "Screening Examination Results" form.

Beginning of Year 2 (Fall)

Student and advisor compose and request appointment of a Ph.D. Guidance Committee, which meets with the student near the beginning of the second year. Prior to the meeting, the student submits a (at least) 1-2 page document outlining his/her proposed research. Following a brief presentation by the student, the committee provides feedback, which includes a second review of the student's coursework and training, and any appropriate recommendations for further course work or directed study.

Year 3

The student must complete the Qualifying Examination (as described in "Requirements and Policies" document) by the end of Year 3. At least one month prior to the exam, the student completes the "Request to Take Qualifying Examination" form (located in folder). At least two months prior to the exam, the student must submit a thesis proposal (the fifteen-pager) to the Guidance Committee and obtain permission to proceed to the exam. The Chair of the Guidance Committee should obtain the student's file for the Qualifying Examination. A "Results of Qualifying Examination" form will be in the file for all committee members to sign. All committee members will continue as the student's Dissertation Committee.

Years 3-5

Following successful completion of the Qualifying Examination, the Ph.D. Guidance Committee becomes the Dissertation Committee. The student meets *at least* annually with the committee. A short memo describing the students' progress (signed by all committee members) is submitted to the Section office following each annual meeting.

Additional Annual Requirements:

Yearly Seminar: *Each student must present a 30-minute seminar once each academic year beginning in their second year.*

Yearly Progress Reports: *On or by September 1, each student will complete and submit to the Section office a brief progress report (signed by each member of their Guidance or Dissertation Committee) detailing their activities during the previous 12 months (courses taken, research undertaken, seminars given at USC and elsewhere, participation in cruises, etc.). Forms for these reports will be emailed to students each summer as a reminder.*

Screening Examination—Marine Biology

Student's Name: _____

ID#: _____

Date of Screening Examination: _____

Pass _____ No Pass _____
(See below)

Comments:

Suggested Courses:

Signatures of Committee Members:

Date: _____

Student: _____

Advisor: _____

Year in Program: _____ (year begins fall semester)

Financial Support (Type & No. of months this year): _____

Present Committee Members: _____

(Screening, Guidance or Dissertation Committee?): _____

Date of Last Full Committee Meeting: _____

Anticipated (or Completion) Dates for:

Screening Exam: _____

Formation of Ph.D. Guidance Committee: _____

Qualifying Exam: _____

First Meeting of Dissertation Committee: _____

Completion of Research: _____

Dissertation Defense: _____

Please attach a brief summary of your progress during the past year

(some guidelines listed below; but feel free to add items)

- BRIEF summary of research progress, problems, future plans.
- List of all courses completed or audited.
- TA duties.
- Participation in lab and field research.
- Meetings/workshops attended.
- Seminars given (USC and elsewhere) include titles, locations, etc.
- Manuscripts submitted, in press or published.

Signature of Student: _____

APPENDIX 1. MEB Relevant Courses

BISC Courses offered on the UPC

- 403 Advanced Molecular Biology (4 units)
- 419 Environmental Microbiology (4 units)
- 435 Advanced Biochemistry (4 units)
- 450 Principles of Immunology (4 units)
- 460 Seminar in Marine and Environmental Biology (2 units)
- 469L Marine Biology (4 units)
- 483 Geobiology and Astrobiology (4 units)
- 502ab Molecular Genetics and Biochemistry (4, 4 units)
- 510 Integrative and Evolutionary Biology (4 units)

- 530 Advanced Seminar in Plankton Biology (2 units) (Caron & Michaels)
- 531 Advanced Seminar in Physiology of Marine Organisms (2 units) (Gracey)
- 532 Advanced Seminar in Molecular and Microbial Ecology (2 units) (Fuhrman)
- 533 Advanced Seminar in Remote Sensing (2 units) (Kiefer)
- 534 Advanced Seminar in Population Genetics (2 units) (Edmands & Hedgecock)
- 536 Advanced Seminar in Marine Biogeochemistry & Microbial Ecology
(2 units) (Capone & Ziebis)
- 582 Advanced Biological Oceanography (4 units)
- [583 Biochemistry and Physiology of Marine Organisms (4 units)]
- 584 MEB Faculty Lecture Series (2 units) - Spring
- 585 Scientific Writing (2 units) (Michaels & Caron)- spring

Related Advanced Courses in Other Departments that can be used to meet course requirements

- GEOL 412 Oceans, Climate and Environment (4 units)
- GEOL 460L Geochemistry and Hydrogeology (4 units)
- GEOL 500 Paleoecology (3 units)
- GEOL 501 Paleobiology (3 units)
- GEOL 512 Introduction to Physical and Chemical Oceanography (3 units)
- GEOL 514 Marine Geology (3 units)
- GEOL 555 Paleo-oceanography (3 units)
- GEOL 560 Marine Geochemistry (3 units)
- GEOL 564 Isotope Geochemistry (3 units)
- GEOL 567 Stable Isotope Geochemistry (3 units)
- GEOL 577 Micropaleontology (3 units)

GEOG 587 GPS/GIS Field Techniques (Catalina Island Summer Source) (4 units)

PPD 694 Coastal Policy and Planning (4 units)

ENG 443 Environmental Chemistry (3 units)

ENG 463L Water Chemistry and Analysis (3 units)

ENG 503 Microbiology in Environmental Engineering (3 units)

ENG 513L Instrumental Analysis (3 units)

CTSE 507 Issues, History & Rationale of Science Education (McComas)

CTSE 509 Advanced Science Teaching Methods (McComas)

Statistics Courses

BISC 499 : Statistics for the Biological Sciences (Waterman and Tavare- Fall 05)

PSYC 501 Statistics in Psychological Research (4, Fa) Principles of descriptive and inferential statistics for psychological research; introduction to analysis of variance and regression. Computer methods. *Prerequisite:* PSYC 274. (Wilcox)

PSYC 502 Analysis of Variance and Experimental Design (4, Sp) Experimental designs and their analyses of variance beyond straightforward factorial, nested, or repeated measures designs. *Prerequisite:* PSYC 501.

PSYC 503L Regression and the General Linear Model (4, Fa) Multiple regression as a tool in experimental and non-experimental data; analysis of variance and covariance as regression on coded variables. Computer applications Laboratory exercises. *Prerequisite:* PSYC 501.

HP 340L Health Behavior Statistical Methods (4, FaSp) Intermediate statistics for health behavior studies; topics include descriptive statistics, hypothesis testing, correlation and regression, and use of computer software in data analysis.

HP 510L Principles of Biostatistics (4) Concepts of biostatistics; appropriate uses and common misuses of health statistics; practice in the application of statistical procedures; introduction to statistical software including EXCEL, SPSS, nQuery. Laboratory.

HP 511abL Data Analysis (4-4, a: Fa, b: Sp) *a:* Major parametric and nonparametric statistical tools used in biomedical research, computer packages including SAS. Includes laboratory. Lecture, 3 hours; laboratory, 1 hour. *Prerequisite:* PM 510L. *b:* Exploratory data analysis, detection of outliers, robust methods, fitting data with linear and nonlinear regression models, computer packages including BMDP. Includes laboratory. Lecture, 3 hours; laboratory, 1 hour. *Prerequisite:* PM 511aL.

Catalina Semester Courses:

- 419L Environmental Microbiology (4, F)
- 499L Molecular Approaches to Microbial Diversity (4, F)
- 474L Ecosystem Function and Earth Systems (4, F)

- 447L Natural History and Island Ecology (4, Sp)
- 373L Conservation Biology (4, Sp)
- 437L Comparative Physiology of Marine Animals (4, Sp)

- 490 Independent Research (4, F, Sp)
- 590 Independent Research (4, F, Sp)