Master of Science in Biology
Graduate Student Handbook

California State University
Fullerton

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Graduate Student Handbook

Master of Science in Biology Program
Department of Biological Science
California State University Fullerton

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I. Information for New and Beginning Graduate Students

Master of Science in Biology at Cal State Fullerton: Training Tomorrow's Scientists, Practitioners and Educators

This is an incredible time to be a biologist. Every day, new research discoveries are made, from the level of single molecules to whole ecosystems. A Master's degree in biology allows you to contribute to this research, to share this knowledge through teaching, or to apply it in public service or private industry. Many of our students use their M.S. as a stepping stone to doctoral or health professions programs. Others enter the workforce immediately in fields such as biotechnology, government service, environmental consulting and teaching. The Cal State Fullerton M.S. Biology degree is a rigorous, research-based program that can be completed in 2-3 years and that prepares you for a variety of careers in exciting and competitive fields.

Our program is distinctive in offering a strong, research-focused and thesis-based M.S. degree, with graduate students working closely with a faculty mentor from the first day of their entry into the program. Our diverse faculty conduct research at all levels of biological organization reflecting the six areas of study available within the program. Faculty members are supported by grants and contracts from foundations and governmental agencies and with their students use state-of-the-art-equipment in their laboratories. For field research, the region has an incredible variety of accessible habitats including deserts, mountains, shrublands, wetlands, rocky coasts, kelp forests and offshore islands. The many academic institutions, biotechnology laboratories, consulting firms and government agencies in the area offer a rich intellectual and career environment for students engaged in thesis research.

Admission Requirements
Applicants seeking admission to the M.S. Biology Program must have: a B.S. or B.A. degree in biology or related field from an accredited college or university; a GPA of 3.0 in all biology or biology-related courses (e.g., biochemistry); and a GPA of 2.5 in the last 60 semester units of coursework, and in all supporting coursework in chemistry, physics and mathematics/statistics. Applicants must also submit 2 letters of recommendation from professors, job supervisors, or other individuals familiar with the applicant's skills and qualifications for graduate-level work. **To be admitted into the program, a student must be accepted by a full-time member of the graduate faculty in Biology who agrees to serve as the student's thesis adviser**. For more information, visit our website at www.fullerton.edu/biology/grads.

Degree Requirements
The Graduate Study Plan (GSP) for the M.S. Biology includes 30 units of committee-approved coursework, at least one-half of which must be at the 500-level. GSPs must include the following:

BIOL500A and BIOL500B Professional Aspects of Biology (2 units)
BIOL580D Biology Colloquium (1 unit)
BIOL598 Thesis (usually 6 units)
BIOL599 Independent Graduate Research (4-6 units)
At least two graduate seminars (BIOL505T, BIOL517T, BIOL520T)
At least 9 units of elective coursework (400-500 level) in the student's research area

In addition, the student must complete a thesis covering a research problem that is acceptable to the adviser and thesis committee, a final oral defense of the thesis, and a public oral presentation.

Faculty Research Areas

1. Ecology and Evolutionary Biology
This M.S. degree area allows students to gain experience in the research methods used to study the evolution and ecology of organisms found in terrestrial, freshwater and coastal ecosystems. Research is conducted on individual organisms, populations, communities and ecosystems, using statistical modeling, modern laboratory facilities and cutting-edge technologies and approaches in both the laboratory and field. Faculty members offer courses and active research experiences in taxonomy and phylogeny, vertebrate and invertebrate ecology, evolutionary ecology, biogeography, behavioral ecology, plant ecology, and conservation biology. Much of this research is conducted in the diverse natural environments of southern California, including studies of threatened and endangered species and human impacts on these environments.

Graduate faculty in ecology and evolutionary biology: Joel Abraham, Jennifer Burnaford, Joshua Der, Douglas Eernisse, William Hoese, Jeffrey Olberding, Darren Sandquist, Jochen Schenk, Parvin Shahrestani, Paul Stapp, Ryan Walter.

2. Marine Biology
This M.S. degree area is designed to provide students with contemporary research skills and expertise in the study of marine organisms and ecosystems. Research in this area ranges from studies of the physiological and behavioral studies of individual organisms, to the phylogeography and evolution of marine taxa, to the conservation and management of coastal habitats and communities. In addition to our state-of-the art laboratory facilities, including an on-site saltwater aquarium system, students take advantage of the proximity of coastal marine habitats, ranging from wetlands and estuaries, rocky intertidal reefs, sandy shores, kelp forests, and soft-bottom systems to human-made harbors. Access to laboratory space in Los Angeles Harbor and use of several ocean-going vessels are provided through our affiliation with the CSU Ocean Studies Institute and the Southern California Marine Institute, which in turn provides opportunities for use of laboratory and living space at the University of Southern California's Wrigley Institute for Environmental Studies on Santa Catalina Island.

Graduate faculty in marine biology: Jennifer Burnaford, Douglas Eernisse, Kristy Forsgren, Misty Paig-Tran, Ryan Walter, Danielle Zacherl.

3. Plant Biology
This M.S. degree area allows students to gain experience in the research methods used to study the biology of plants, a field also known as botany. Research opportunities in this area include studies of plant diversity, plant cell biology, developmental plant biology, plant ecology, plant evolution, plant genetics, molecular plant biology, organismal plant biology, phycology, plant physiology, plant animal interactions, plant-microbe interactions, and plant pathology. Plant biology researchers work in the laboratory or in the field and take advantage of outstanding campus facilities, such as modern laboratory facilities, plant growth chambers, the Biological Science Greenhouse Complex, the MacFadden Herbarium, the Nano- and Micro-Visualization Lab, and the Fullerton Arboretum.

Graduate faculty in plant biology: Joel Abraham, Jennifer Burnaford, Amybeth Cohen, Joshua Der, Melanie Sacco, Darren Sandquist, Jochen Schenk.

4. Cell and Developmental Biology
This M.S. degree area provides students with the opportunity to study animal and plant development, microbiology, cell signaling pathways, cytoskeleton dynamics, fertilization processes, cancer biology, stem cell biology, and neurobiology. Research is conducted at the level of the individual organism and at the cellular and molecular level. Campus facilities include modern laboratories with state-of-the-art instrumentation, in addition to facilities for animal and plant growth, mammalian tissue culture, and several types of microscopy, including confocal and both transmission and scanning electron microscopy. Most faculty members in this area participate in the Center for Applied Biotechnology Studies.

Graduate faculty in cell and developmental biology: Katie Brennan, Merri Lynn Casem, Esther Chen, Math Cuajungco, Alison Miyamoto, Nilay Patel, Joselyn Soto.

5. Molecular Biology and Biotechnology
This M.S. degree area is designed for students seeking to develop skills and expertise to conduct molecular research using cutting-edge technologies to solve basic research problems relevant to genetics, medicine, agriculture and the environment. Emphasis is placed on molecular research in prokaryotic and eukaryotic organisms under the close guidance of a faculty mentor. Research areas include: environmental microbiology, bacterial virulence, pathogenesis, regulation of gene expression, plant environmental stress, and genetic recombination using the latest techniques in molecular biology, bioinformatics, gene manipulation and biotechnology. Most faculty members in this area participate in the Center for Applied Biotechnology Studies.

Graduate faculty in molecular biology and biotechnology: Esther Chen, Amybeth Cohen, Math Cuajungco, Joshua Der, Veronica Jimenez Ortiz, Hope Johnson, Nikolas Nikolaidis, Nilay Patel, Maria Soledad Ramirez, Melanie Sacco, Parvin Shahrestani, Marcelo Tolmasky, Ryan Walter.

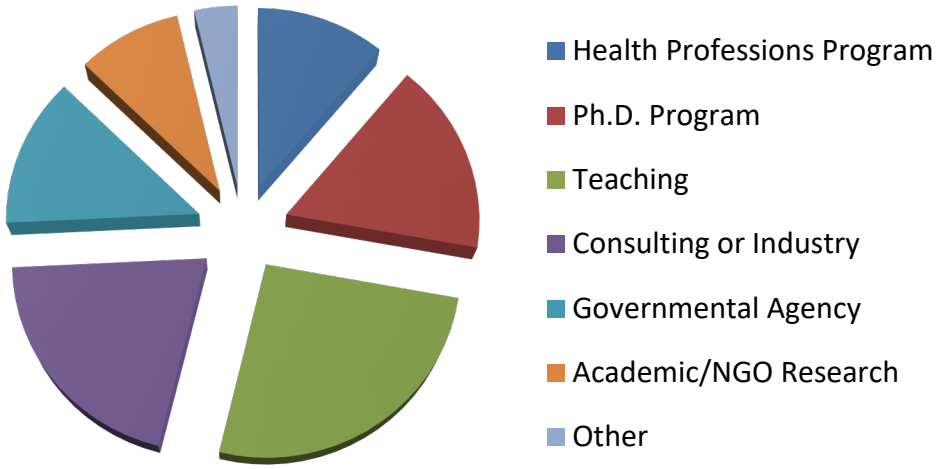
6. Biology Pedagogy Research
This M.S. degree area is designed to produce graduates with an interdisciplinary background in biology and pedagogical research. Our students gain advanced expertise in a biological discipline as well as in educational theory and research methodologies. Graduates of our program are broadly trained in teaching and research processes and go on to Ph.D. programs or careers as community college instructors or K-12 teachers.

Graduate faculty in biology pedagogy research: Joel Abraham, Merri Lynn Casem, William Hoese.

Financial Support
The Department of Biological Science offers teaching associate and graduate assistant positions to virtually all of our graduate students. Grant-supported research assistantships may also be available. These positions and assistantships provide a basic salary that helps to meet the costs of a graduate education. In addition, a number of small scholarships are available each year. Non-resident tuition and fee waivers may be available for some out-of-state and foreign students. For additional information about financial aid, contact the Office of Financial Aid at (657) 278-3125 or www.fullerton.edu/financialaid/.

Careers of Recent M.S. Biology Alumni

Most of our M.S. graduates enter Ph.D. or health-professional programs, become primary or secondary teachers or college instructors, or take positions in industry, consulting or governmental agencies. [See diagram below.]



For More Information

To learn more about our Master of Science in Biology Program, contact the Biology Graduate Program Adviser by email at biogradadv@fullerton.edu or by calling the Biology department office at (657) 278-3614. You are also welcome to visit our department located in McCarthy Hall (MH) 205, or to write to: Biology Graduate Program Adviser, Department of Biological Science, California State University, Fullerton, 800 North State College Blvd., Fullerton, CA 92834-6850 (email: biogradadv@fullerton.edu). The program's website is www.fullerton.edu/biology/grads/.

B. Frequently Asked Questions (FAQs)

- **How do I get keys?**
- **Will I have office space and a desk?**
- **How do I get work-related mail?**
- **Do I have an email account?**
- **How do I make photocopies and send faxes?**
- **Who are the primary departmental support staff and what are their roles in the department that pertain to graduate students?**
- **What other common resources and facilities are available in the department for graduate students?**
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- **What library resources are available?**
- **What is the Biology Graduate Student Club (BGSC)?**
- **What other departments, offices and organizations should I know about?**

How do I get keys?
Within a week of arriving on campus, ask your thesis adviser (or teaching supervisor) to submit a request for keys for you. This is done by completing a digital key request form available from the Department Administrative Coordinator (DAC). Normally, you will be assigned a key to the outside door to the building (MH and/or DBH) and key(s) to your research lab and office space. TAs may also be given keys to teaching labs. The form must be signed by a faculty member and submitted to the DAC. Keys are picked up at the University Police Department and must be returned when you leave the program or a teaching assignment.

Will I have office space and a desk?
Many faculty members provide desk and work space for students in their research labs. All teaching associates will have access to a desk, e.g. in the Biology Teaching Associates Office MH-328, where they can hold office hours with their students. TAs are expected to keep this room clean and orderly. If you are not a TA, desk space may be available elsewhere; ask your adviser or the Department Administrative Coordinator.

How do I get work-related mail?
Graduate students will usually have a mailbox in the Biology department office if they are working as a TA, GA, or have other paid position in the department. Mailboxes are organized into full-time faculty, staff, part-time faculty and graduate students, by last name. Mail is delivered and picked up once a day, in MH-205.

Will I have a university email account?
All registered students will have a student email account on the university server (@csu.fullerton.edu) which will be assigned to you. ***You should set it up as soon as possible and must use this email account for ALL university-related correspondence.*** *In addition, TAs will be given an employee account (@fullerton.edu) to be used primarily for teaching/employment-related correspondence (you will lose this account when you are not a TA or GA). The university has a wireless network that can be accessed via your student or TA account. Information on accessing the wireless network is available at the Division of Information Technology website.*

How do I make photocopies and send faxes?
There are 2 photocopiers in the Department Office. They are primarily dedicated to supporting teaching, office administration and faculty research, and require entry of a 4-digit code. TAs may be given a code for the courses they teach. Graduate students can make copies for their own personal/research purposes (ask office staff for the cost per page). The department can assign you an account and access code, but the balance must be paid each semester.

One photocopier is also a FAX machine and scanner. You can send personal faxes but must record all the information in the log (burgundy binder) near the machine, including the account to which the FAX should be billed. Personal faxes are billed at a rate of $1 per page. Instructions for using the fax machine are in the front of the copy machines.

Who are the primary departmental support staff and what are their roles in the department that pertain to graduate students?

Biology Graduate Adviser (biogradadv@fullerton.edu)
- *not staff, but a full-time faculty member who coordinates the M.S. in Biology*
- *may change between semesters; check in the department office*
- *often teaches BIOL500A/B; signs many departmental forms*

Karen Lau (MH-205, X2461, klau@fullerton.edu)
- ***Department Administrative Coordinator (DAC)***
- *along with Biology Graduate Adviser, coordinates graduate program*
- *handles various graduate student forms including Advising forms for registration*
- *handles Thesis Committee Meeting requests and Thesis Defenses-Presentations*
- *hires and schedules GAs, ISAs, TAs and part-time lecturers*
- *handles Human Resources and academic-related issues*
- *is the Department Information Technology Coordinator (for all email accounts)*
- *handles work orders for any/all biology facilities*

Maryanne Busch (MH-205; X3614, maryannebusch@fullerton.edu)
- *receives office guests and communicates with students*
- *handles incoming graduate applications and scholarships*
- *organizes undergraduate advising*
- *receives completed forms related to lab safety and academic field trips*
- *oversees use and checkout of departmental vehicles and driver's training*
- *assists with student travel forms*
- *orders textbooks and desk copies*

Dayna Melton (MH-377; X2780, dmelton@fullerton.edu)
- *oversees operations of Stockroom, including purchasing supplies*
- *oversees budget and dispersion of state funds, including departmental research funds awarded to students*

Dawn Hendricks (MH-308; X2703, dhendricks@fullerton.edu)
- *Instructional Support Technician for BIOL152, BIOL254L*

Trung Nguyen (MH-225B; X2460, trnguyen@fullerton.edu)
- *IT support for classroom and research laboratory computers*

TBD (MH-354A; X4096)
- *Instructional Support Technician for BIOL202, 253L, 302, 431, and 438*

Irene Ecarma-Robinson (MH-361; X2130, iecarma@fullerton.edu)
- *Instructional Support Technician for BIOL151, 191B, 362 and 424*

Aaron Daveler (MH-003A); X2463, adaveler@fullerton.edu)
- *maintenance and repair of department equipment*
- *helps design and build research tools and equipment*
- *serves as the Department Safety Coordinator*

Edward Read (Greenhouse Complex; X2766, eread@fullerton.edu)
- *manages operations and maintenance of department greenhouse*
- *provides plants used in some courses*

Steven Karl (MH-013; X2565, skarl@fullerton.edu)
- *supervises use of confocal, electron and fluorescence microscopes*
- *repairs and maintains teaching and research microscopes*
- *assists with set-up of physiology labs*

Esther Escobar (MH-211A; X5543, elescobar@fullerton.edu)
- *Lab Animal Facility Specialist*
- *oversees all laboratory animal care and use, including use of animal rooms*
- *responsible for vertebrate and marine animals used in courses*
- *serves on university Institutional Animal Care and Use Committee*

What other common resources and facilities are available for graduate students?

Office supplies (Department Office, MH-205,available to TAs/GAs)
Ice machines (located in MH-385, MH-638, and DBH-161A)
Dry ice and liquid N (DBH-172; contact Elaine Mina in Chemistry X3509)
Autoclaves (MH-385, DBH-143; contact your adviser, Aaron, Irene or Vincent for use)
Poster Printing Room (MH-385A; contact the Department Administrative Coordinator for access)
Stockroom (MH-377; Dayna Melton)
Greenhouse Complex
Greenhouse Facilities (contact Ed Read)
Marine Storage Shed (contact Dr. Danielle Zacherl)
Storage containers for field gear
Herbarium (contact Dr. Jochen Schenk or Joshua Der)
Vertebrate and Terrestrial Invertebrate Teaching Collections (contact Dr. Paul Stapp)
Conference Room (Department Office; contact Department Office Staff to schedule)
Computer Laboratory (contact Department Office Staff to schedule)
Animal Facilities (contact Esther Escobar)

I was accepted into the graduate program with conditions. What does this mean?

Many of our students enter the program lacking one or more of the key requirements for admission in the program. Often, a student's GPA is below our admission criteria or the student is missing coursework that is deemed to be important preparatory work for entry into the program. In such cases, the Biology Graduate Program Adviser will indicate these conditions on the acceptance letter and describe what must be done to remove them. Conditions must be removed within 1 or, at most, 2 semesters of entry into the program and must be removed for a student to attain "classified" standing. ***It is the student's responsibility to know their conditions and take the steps necessary to meet them on time****. Failure to meet these conditions in the specified time period may result in a hold being placed on your registration, administrative notice and ultimately disqualification from the program.*

I've been awarded a teaching associate position. What is involved?

Teaching and graduate/instructional support assistantships (TAs, GAs, ISAs) are available to continuing students in good standing who have met their conditions of admission and are qualified to work in courses for which assistants are needed. When you applied for admission, you were asked to list some of the courses that you were interested in teaching. The department makes every attempt to have TAs, GAs, and ISAs work in their area of specialty or in non-majors courses such as BIOL101L. TAs are assigned to lab courses based on the needs of the department, requests by full-time faculty, and the requests of TAs. If there is a course you would like to teach and you are qualified, contact the DAC to see if there are any openings, and request the course when you receive the survey at the end of the semester. Note that your thesis adviser will have to approve your teaching assignment to help you ensure that your overall workload, including research responsibilities, is not too heavy.

Expectations of TAs, GAs, and ISAs vary among courses and instructors. Many courses have written statements of expectations, including specific policies for participating in lectures, grading, handling student issues, etc. Most courses with large enrollments have mandatory weekly TA/GA prep meetings, and have staff lab coordinators, with whom you will sometimes work closely to prepare for lab.

What is BIOL500A/B?
BIOL500A and BIOL500B (Professional Aspects of Biology) are 2 courses taught back-to-back, usually on Mondays, that serve several important functions. First, it introduces new students to the department and its policies pertaining to graduate students. Second, it is the mechanism by which students develop their Graduate Study Plan (GSP; a list of courses that the student will take during their program), their Thesis Research Proposal, and related presentations. Third, it helps students develop professional skills, including using library resources, writing proposals, and giving oral and poster presentations. Finally, it helps students forge peer relationships that they can depend on throughout their program.

In order to make timely progress, new M.S. students enroll in BIOL500A and BIOL500B in their first or second semester on campus, as specified in their acceptance letter.

What is BIOL580D and why is it required?
All students in the M.S. Program in Biology must pass, with a grade of B or better, 1 unit of BIOL580D Biology Colloquium once during their program. Students attend weekly seminars, with topics ranging widely from biochemistry, cellular and molecular biology, to evolution, ecosystem science and conservation biology. They are required to write short synopses and read scholarly papers related to a subset of the seminars they attend. Students are expected to take BIOL580D early in their program, when they would benefit most from exposure to the diverse and multidisciplinary nature of biology, and will help them develop a sense of departmental citizenship and collegiality. They should also attend department seminars when they are not enrolled in BIOL580D. ***Note that BIOL580D is not the same as BIOL580.***

What are variable-unit courses (BIOL580/598/599) and how do I sign up for them?
Most graduate students enroll in one or more of the variable-unit courses each semester that they are taking classes or doing research. These courses allow students to earn credit for work related to your graduate studies and allow your thesis adviser and the department to get credit for the time and effort that they dedicate to you each semester. Enrollment in BIOL599 is required to work in a lab and to use a departmental vehicle for research purposes. It also makes students eligible for departmental research funds. BIOL580 is used by many faculty members to give credit for a student's participation in lab and individual meetings, library-based research or writing, or presentation of a paper or poster at a scientific meeting. Students can only count a maximum of 1 unit of BIOL580 on their Study Plans, which must be graded using the traditional scale (A-F). Many students take BIOL580 every semester and, except for the 1 unit that they may have on their Study Plans, BIOL580 should be taken Credit/No Credit (CR/NC). BIOL598 Thesis is intended to be taken after a student passes their 1st thesis committee meeting, when they are completing their theses in their final semesters in the program.

You must meet with your adviser each semester to discuss which courses to take and for how many units. Before you can enroll online, you must first complete a digital Graduate Student Advising Form available in the department office, which must be signed by your thesis adviser and the Biology Graduate Program Adviser. For BIOL598 and 599, you must complete an outline of goals and plans for work to be done during the upcoming semester. Be sure to use the correct sections and course numbers associated with your thesis adviser. ***See the section on Graduate Student Advising later in the Handbook for advice and procedures****.*

Once these forms are approved, you will be given a permit to enroll online, which will remove your advising hold. If you plan to take 400-level biology courses, you should be advised and register as early as possible because these courses may fill up quickly with undergraduates.

IMPORTANT: Students should list 6 units of BIOL598 on their Study Plans. They cannot complete more units of BIOL598 than are on their Study Plan and cannot enroll in more than a total of 6 units of BIOL598 during their program. Also, students also cannot enroll in more than a total of 8 units of BIOL580 and 12 units of BIOL599 during their program. Although up to 3 units each of BIOL580, 598 and 599 can be taken in a given semester, it is unusual for students to take more than 1 unit of BIOL580 and 2 units of BIOL599 at a time (requests for more units must be justified on the advising form). Consider these limits carefully when planning your coursework each semester.

How many units should I take each semester?
The number of units you take will be determined in consultation with your thesis adviser and is based solely on your Study Plan and the type and amount of work you are doing toward your research and thesis. The minimum number of units you must take to maintain continuous enrollment is 1 unit. Tuition cost is determined by the number of units enrolled, with two categories identified by the university: part-time, 6 or fewer units; full-time, 7 or more units.

When you have completed all of your Study Plan units; successfully completed your research and your 1st and 2nd committee meetings; have applied for graduation; and have only to complete your thesis and defense, you may enroll in GRAD(Graduate Studies)700 through Extended Education (see pp. 34-35 for procedures). This option is designed to allow students who have left campus to maintain continuous enrollment status without paying full fees. Students enrolled in GRAD700 in this way have no university benefits except library privileges. Enrollment in GRAD700 must be approved by your thesis adviser and the Biology Graduate Program Adviser.

What funds are available to support my research?
Your thesis adviser and the more senior graduate students in your lab and the department will be the best sources of information on grants, scholarships and other funding opportunities available to support research in your discipline. Websites of the Office of Financial Aid and the College of Natural Sciences and Mathematics provide information on scholarships and aid programs at the college and university level. Most applications are due in early Spring semester. ***Note that if you qualify and plan to apply for U.S. Federal Financial Aid, you should submit your completed FAFSA by 1 Mar for priority access to both grants and loans for the coming year.***

Each Fall, the department aims to make limited funds ($100-150) available to support student research. Requests for short proposals for these funds are solicited in the middle of the semester from the Biology Graduate Adviser. Awarded funds are administered through the Stockroom.

The College of Natural Sciences and Mathematics InterClub Council (ICC; see the NSM website) coordinates the allocation of student body-generated funds (ASI) for graduate student travel, especially to present papers at scientific meetings. ASI also awards small grants to students that can be used for research supplies; applications are due in Fall semester. Contact one of the Biology Graduate Student Club (BGSC) officers for more information on how to apply.

I heard that I need laboratory safety training to teach and work in a lab. How do I do this?
All students working in laboratories or in the field, and all teaching associates, are required to attend a laboratory safety training course taught by Environmental Health and Safety (EHS). New students who are TAs may receive this training during Orientation. Other sessions are held online or during the semester. Look for poster announcements or contact EHS for dates of other training sessions.

I would like to use a departmental vehicle for my field research. How do I do this?
The department has specific policies and procedures regarding the use of its departmental vehicles, and for taking field trips, which includes independent research conducted by graduate students. These procedures are outlined in 2 separate documents that are available on the departmental website:

- *Policy on Departmental Vehicle Use*
- *Guidelines and Procedures for Academic Field Trips*

To drive a vehicle on university business, you must be either a state employee (TA or GA) or registered as a Volunteer. You also must have all the necessary paperwork (several forms) on file. To use your own vehicle on state business, you must also complete an Authorization to Use Private Vehicle Form. If you plan to drive unsupervised, e.g. for your research, you must also be enrolled in BIOL599. Additional forms are required for course-related field trips. If you plan to travel for research or course field trips often, you should complete the necessary paperwork with the DAC as soon as possible upon arriving on campus. See those documents for more details.

Departmental vehicles are reserved by signing them out in the Stockroom. You must be approved as a driver to use a vehicle. You must give your contact information and list your and your thesis adviser's name on the sign-out sheet. Be sure you read and understand the policies regarding reserving and using the vehicles.

My research likely involves live vertebrate animals or human subjects. Are there special policies and guidelines that I should know about?
If your M.S. thesis research involves human participants or live, vertebrate animals, you must obtain the proper approval for their use based on federal regulations and University policy. Before conducting the research, the project must have received approval from the Institutional Review Board (IRB) for human participants or the Institutional Animal Care and Use Committee (IACUC) for live, vertebrate animals. Both require online training through CITI and research involving animals may require medical health clearance. If you plan to use human participants or animal subjects in your research, first check with your thesis adviser to find out if they have already received approval for your work. If not, you can find information on the IRB or IACUC application process on the Research Compliance webpage.

What library resources are available?
The Pollak Library has a wide range of academic journals, many of which are available online. There also are a variety of searchable databases through the library, as well as the ILIAD and LINK+ inter-library loan programs for borrowing materials from other institutions. To make photocopies at the library, you must purchase a copy card and use their copy machines. Anyone with a CSUF Faculty/Staff ID can check out journals for 24 hours; this is done at the Periodicals Desk on the 2nd floor. Faculty can also authorize, by proxy, students who are not faculty/staff to check out journals by completing a "proxy authorization form" from the Circulation Desk.

What is the Biology Graduate Student Club (BGSC)?
The Biology Graduate Student Club is a student organization that serves graduate students in the Department of Biological Science by hosting seminar speakers, coordinating social events, and increasing communication between students and other members of the department. Membership in the club always provides access to travel support for scientific meetings through the Inter-Club Council. Contact one of the officers for more information about the club, events, and how to become involved.

What other departments, offices and organizations should I know about?
Graduate Studies Office (http://www.fullerton.edu/graduate/)
Office of Financial Aid (http://www.fullerton.edu/financialaid/)
Student Business Services (https://sbs.fullerton.edu/)
International Students & Scholars Office (https://extension.fullerton.edu/international/students/)
Pollak Library (http://www.library.fullerton.edu/)
Office of Research Compliance (http://www.fullerton.edu/doresearch/compliance/)
Titan Research Gateway (http://www.fullerton.edu/doresearch/)
Auxiliary Services Corporation (http://www.fullerton.edu/asc/)
Office of Environmental Health and Safety (https://ehs.fullerton.edu/)
College of Natural Sciences and Mathematics (http://www.fullerton.edu/nsm/)
Titan Student Union/Associated Students of CSUF, Incorporated (https://asi.fullerton.edu/)
Student Wellness (including CAPS, https://www.fullerton.edu/studentwellness/)
Dean of Students (http://www.fullerton.edu/deanofstudents/)

C. Policy of Good Standing

Graduate students must remain in good standing throughout their M.S. degree program. To be in good standing, a graduate student must:

1. Be in compliance with the "Graduate Academic Standards" listed in the University Catalog. Requirements include:
    a. Maintaining a grade-point average of at least 3.0 (B) in coursework on the Graduate Study Plan (GSP) and in all 400- and 500-level courses attempted as a grad student. A student also must earn a minimum grade of C (2.0) in each course on the GSP.
    b. Repeating a course in which an unsatisfactory grade (less than C) was received no more than once.
    c. Making timely progress in completing the coursework portion of the GSP within 5 years (up to 7 years by petition to the Graduate Studies Office), starting with the earliest course on the GSP. After this time limit, courses on the GSP may become outdated and the student will have to either replace outdated courses with new ones or petition to validate outdated courses (a maximum of 9 units can be validated).
    d. Maintaining continuous enrollment except by approved Leave of Absence.
    e. Demonstrating a level of professional competence commensurate with the standards of Biological Science in all teaching and research activities (also see 2d below).
    f. Not engaging in behaviors that violate the "Student Conduct Code" as defined in the Catalog. Issues of academic integrity particular to graduate students can be found on the Dean of Students webpage.
2. Be in compliance with the standards of the Master of Biology Program (these may be more restrictive than University policies). Requirements include:
    a. Satisfying the conditions for admission to the M.S. Program.
    b. Successfully completing all the requirements of BIOL500A and BIOL500B, including completion of an adviser-approved Graduate Study Plan, within 2 semesters of entering the program.
    c. Maintaining a productive working relationship with a thesis adviser, which may include, but is not limited to: communicating in a timely and effective manner; responding constructively and promptly to feedback; actively participating in individual and research-group meetings; adhering to institutional safety, security, and ethical protocols and standards; following sound procedures for record-keeping and data management; maintaining lab/field materials and equipment in good working order and with minimal waste of resources; and, importantly, making timely progress on a research project that is satisfactory to the thesis adviser and thesis committee.

If a student fails to maintain the standards in items 1 and 2, the Biology Graduate Program Adviser will recommend that the Graduate Studies Office place the student on Academic and/or Administrative-Academic Notice, which could lead to disqualification from the program (see Graduate Studies Office webpage for academic policies and procedures as they pertain to graduate students). Students on notice must meet with the Graduate Program Adviser before being allowed to register for classes the following semester.

D. M.S. in Biology Program Overview

Although each student's degree program will be different, there are several key milestones shared by all students in the M.S. in Biology Program. The following pages describe the process of completing a **Graduate Study Plan** (GSP), which is the formal list of courses to be taken. This will be accomplished as part of the requirements of **BIOL500A/B** during the first or second semester in residence. In these courses, you will also develop a draft of your **Research Proposal**, which will be the framework for your thesis research. You will have at least 2 **Thesis Committee Meetings**, where your thesis committee will approve your research plan and then discuss your progress. Your degree program will culminate in your preparing a **written Thesis**, having an **oral Thesis Defense** before your adviser and committee, and giving an **oral Public Presentation** on your thesis research. The entire process can be finished in ~2 years, but most students take longer, often because they underestimate the time required to complete a research project and write a thesis and may have to work on- or off-campus. **It is your responsibility to maintain steady progress on research, including holding committee meetings, to keep track of coursework requirements on your GSP, and to remain in Good Standing in both the program and university.**

The timeline below is an approximate guide to meeting these milestones, based on deadlines in the Thesis Committee and Thesis Guidelines sections below. Another timeline (p. 31) lays out the final steps toward completing the degree. The timeline below is anchored on the semester you take BIOL500A/B because of the key events associated with those courses. The plan here describes a student who matriculates in Fall and takes BIOL500A/B in the first term; students who take BIOL500A/B in their 2nd semester would adjust their plan accordingly.

Term	**Event**	**Outcomes**
Semester 1	BIOL500A/B	Study Plan, Research Proposal, Thesis Committee identified, Conditions met
Semester 2	1st Thesis Committee Meeting	Research
Summer 1		*Research*
Semester 3		Research
Semester 4*	2nd Thesis Committee Meeting	Research/ Data Analysis/ Thesis Writing
Summer 2		*Research/ Data Analysis/ Thesis Writing*
Semester 5	Thesis Defense and Presentation	Degree program completed
Semester 6*		

***To make timely progress, you should hold your 1st Committee Meeting during the semester following BIOL500A/B or shortly thereafter. To avoid being placed on Administrative-Academic Notice, you MUST have your 1st Committee Meeting no later than your 4th semester in residence and your 2nd Committee Meeting by your 6th semester.**

E. Graduate Study Plan

Guidelines and Procedures: The Graduate Study Plan (GSP) is the guiding document that describes your plan of coursework during your graduate program. It serves as your "contract" with the program and university for completion of the requirements of the M.S. Biology degree. You must complete a draft of the GSP during BIOL500A/B and submit it, signed by your thesis adviser, at the end of the semester. You should list the 3 (or more) members of your thesis committee on the form if you know them at that time (*be sure that they have agreed to serve on your committee before listing them on the form*). The BIOL500A/B instructor will send the adviser-signed draft copy to the Biology Graduate Program Adviser and Department Administrative Coordinator (DAC). Your thesis committee will review and approve your GSP during your First Committee Meeting and your thesis adviser will send it to the DAC and Graduate Program Adviser. You should keep a copy and one will be made available to your adviser for advising visits. You cannot arbitrarily change courses (or terms) listed on your GSP and completed courses cannot be removed. If any changes are necessary, these must be approved by your committee by submitting the appropriate form to the DAC and Program Adviser.

Checklist for completion of the Graduate Study Plan:

- ✓ Have you decided on your GSP courses after careful consultation with your thesis adviser, including consideration of when courses will be offered?
- ✓ Does your GSP list the courses that best prepare you for your thesis research and professional development?
- ✓ Do you have a total of 30 units, of which at least half (15) are at the 500-level?
- ✓ Does your GSP include BIOL500A and 500B, to be taken within your first 2 semesters?
- ✓ Have you listed at least 2 seminar courses, e.g. BIOL505T, 517T, or 520T (6 units)? Additional seminar courses can be used to meet the 30-unit requirement.
- ✓ Have you listed BIOL580D Biology Colloquium, which is usually taken during your 1st year? No more than 1 unit of BIOL580 (as an elective) may be listed on your GSP.
- ✓ Did you list 6 units of BIOL598 and 5-6 units of 599 units, depending on the number of elective units listed? [Note: You **cannot** enroll in more than the number of units of BIOL598 listed on your GSP during your time as a graduate student. You may enroll in a maximum of 8 units of BIOL580 and 12 units of BIOL599 during your entire program. Only units (and grades) listed on your GSP will be counted toward your degree.]

Note: Your acceptance letter will list any Conditions of admission that must be met. It is your responsibility to monitor and meet these Conditions by the deadlines listed (usually within 1 or 2 semesters of admission), and to keep your thesis adviser and committee informed of the status of these Conditions.

F. Graduate Student Advising

Students in the M.S. Biology program work closely with their thesis advisers to tailor their coursework and research plans to meet their individual goals and interests. Although our program emphasizes research, students must plan their coursework carefully to complete their degree in a timely manner. Because the department has few graduate (500)-level courses, graduate students typically fulfill their elective requirements with 400-level undergraduate courses, many of which are offered sporadically or tend to fill quickly. In addition, there are limits on the number of variable-unit courses that students can take, and these units should be taken in a logical order that reflects the student's progress toward the degree and their completion of important milestones. Therefore, thesis advisers must help graduate students plan their coursework each semester, based on their Graduate Study Plans (GSP) and the pattern of biology course offerings.

Graduate student advising takes place at the time of undergraduate advising (mid-semester) and is necessary so that graduate students can enroll in courses that might fill quickly with undergraduates. ALL students, including those who are planning to take only variable-unit 500-level courses, should register during the regular registration period for at least 1 course. For such students, this might logically be BIOL580, which will allow them to be hired as a teaching associate or graduate assistant (assignments are made during the brief periods between semesters). Students enrolling in research (BIOL599) or thesis (BIOL598) units must summarize their progress on their thesis project and set goals and plan the work to be done in the *upcoming* semester. **These goals and plans must be described in sufficient detail on the form to serve as the basis for the grade that the student will earn.** In most cases, the student will complete this information on a digital (Word) copy of the form and then email it to the adviser before the meeting so that they can review it together and make changes. For BIOL599, the student must also complete the Lab/Field Safety form attached. The form must be signed by the student and thesis adviser and submitted to the Department Administrative Coordinator (DAC), who will quickly review it and send it to the Graduate Program Adviser for signature. If it is approved, the student will be issued a permit to allow the student to enroll in the classes listed. It is the students' responsibility to enroll and avoid any late fees.

The advising forms are available online on the M.S. Biology website. The student and adviser will need to review the approved GSP, unofficial transcripts, and dates of completion of thesis committee meetings in preparation for their meeting.

Tips for semester advising

Thesis advisers must review the GSP, evidence of completion of admission conditions, and dates of committee meetings prior to advising the student each semester.

The minimum course load to maintain continuous enrollment is 1 unit for resident students and 6 units for International Students. A student's course load is determined solely by their programmatic needs (research, coursework) to make progress toward the degree, NOT by other matters such as financial aid, insurance, scholarships, etc.

Students must enroll in at least 1 unit of BIOL599 to work in the lab/field on research, drive state vehicles, etc. BIOL580 is usually used for library research projects, participation in meetings, presentations, etc. Except for the 1 unit of 580 that might be approved on their GSP (which must have a letter grade), students should take BIOL580 using the CR/NC grading option.
Students cannot take more than 3 units of BIOL580, BIOL598 or BIOL599 in any semester. Except under exceptional circumstances requiring documentation and prior approval, students should not take more than 1 unit of BIOL580 in a semester and 2 units of BIOL599. Students cannot ever enroll in more BIOL598 units than what is listed on their GSP (never more than 6 units during entire program). Students cannot take more than 8 units of BIOL580 and 12 units of BIOL599 during their entire program, so consider how these units will be distributed if it is expected that a student will take longer than 2 years to complete the degree. This limit can be appealed for extraordinary circumstances.

Thesis units are intended to reflect data analysis and writing of the thesis and, in principle, should be the last units that a student takes in their program. Students cannot enroll in BIOL598 units until after they have passed their First Committee Meeting, and should not complete their final thesis units until after they have completed their Second Committee Meeting. Students should be given RP grades for BIOL598 until the thesis defense has been passed and the thesis has been submitted. All RP grades must be changed to letter grades upon graduation. The Second Committee Meeting and Thesis Defense should not be held in the same semester.

Units of BIOL598 and BIOL599 units should be taken in increments that will add up to the numbers on the approved GSP. If a student takes more units of BIOL599 than are listed, usually the last units taken will be counted on the GSP.

If a student has completed all of their GSP units, all of their research, and passed both Thesis Committee Meetings, they may be eligible to enroll in GRAD700 through UEE (see pp. 34-35). This course allows the student to maintain continuous enrollment but at a much reduced cost. Students have reduced access to campus resources and cannot work in the field/lab on their thesis research, but they can be hired by the Biology department to work as a TA, ISA, or GA. The GRAD700 request form is available from the DAC.

Students can request a Leave of Absence for up to 2 semesters, although this does not stop the clock for meeting program milestones. See p. 35.

If a student does not complete all program requirements within 5 years, the student can request to extend their position in the program for up to an additional 2 years. This request is submitted by the Graduate Program Adviser through an online form on the Graduate Studies website.

Students should NOT plan to defend their theses during Intersession or Summer, when faculty are often off campus and are not paid for their work. Students must consult with their thesis adviser and committee in advance of planning a summer graduation date and must petition for approval to do so.

Below is a possible schedule for a M.S. Biology student. It is intended only as a guide. Students should aim to complete their BIOL598 units at the very end of their program, but not before they have passed or scheduled their Second Committee Meeting.

Schedule of hypothetical MS Biology student

This student lists 6 units of BIOL598 and BIOL599 on GSP

Year	Course	Units	
Yr1	BIOL500A/B	2	
	BIOL580D	1	
	Grad Seminar1	3	
	Elective1	3	
	Elective2	3	
	BIOL580	2	
	BIOL599	2	*should complete 1st Committee Meeting before Yr2
		16	
Yr2	Grad Seminar2	3	
	Elective3	3	
	BIOL580	2	
	BIOL599	4	
	BIOL598	2	*could take 6 units of 598 here to finish in 2 yr but
		14	must complete 2nd Committee Meeting
Yr3	BIOL580	2	
	BIOL599	4	
	BIOL598	4	*adjust units of 598 to make 6 units if not taken in Yr2
		10	
Yr4	BIOL580	1	
	BIOL599	1	*or take remaining units of 598 if not taken in Yr2 or Yr3
	GRAD700		*assumes eligible for GRAD700 in Semester 2
		2	
Total Units		**42**	*students on Financial Aid can take a max. of 45 units

Course	Total	Max. permitted
BIOL580	7	8
BIOL599	11	12
BIOL598	6	≤6 (see GSP)

At any time after all GSP coursework, research, and committee meetings are complete, the student should conside enrolling in GRAD700 through UEE to reduce tuition/fees

II. Graduate Thesis Committee and Thesis Guidelines

(effective Fall 2005; approved 5/20/05; last revised 5/26/2023)

A. Guidelines for the First Thesis Committee Meeting

The **purpose** of the First Committee Meeting is for the student to present and discuss their proposal for the thesis research project, and to obtain agreement from the committee that it is a reasonable project to pursue. The meeting should be designed to ensure the soundness and feasibility of the thesis research design and ideally will provide the opportunity for the student to make necessary changes in the direction of the research in its early stages. It also is an opportunity for the committee to outline the expectations for completion of the thesis and the student's degree program.

The **outcome** of the meeting will be approval of the proposal as presented or committee recommendations for modifications, which, if substantive, may require an additional meeting.

It is expected that the First Committee Meeting will occur in the semester after the student has completed BIOL500A/B (Professional Aspects of Biology), or shortly thereafter. This is important because **the thesis committee must formally approve the research plan before work on the project can begin**. Barring unforeseen circumstances, the student must have their first meeting no later than the end of the fourth semester, or risk being placed on administrative-academic notice and disqualified from the M.S. Biology program.

1. Selecting your Thesis Committee and Preparing for the First Committee Meeting:

The student shall have selected committee members in consultation with the thesis adviser and obtained consent of the committee members to serve. The committee shall consist of the thesis adviser who is a member of the graduate faculty in Biology, plus a minimum of 2 additional CSUF faculty members, at least 1 of whom must be a full-time faculty member in the Department of Biological Science. Additional committee members (usually only 1) can be added at the adviser's discretion. This member may be external to the Department or University.

Normally, the student will have successfully completed BIOL500A/B, will have an approved Graduate Study Plan (GSP), and the thesis proposal and oral presentation produced in BIOL500A/B will have been revised and expanded. The thesis proposal prepared for the First Committee Meeting will follow BIOL500A/B proposal guidelines.

The student must obtain express permission from the thesis adviser before scheduling the First Committee Meeting. A copy of the adviser-approved thesis proposal should be given to all committee members **2 weeks** before the meeting.

The student will prepare an oral presentation (~15-30 minutes) and review this presentation with the thesis adviser prior to the meeting. It is expected that each committee member will critically read the thesis proposal prior to the meeting. If a committee member finds major problems with the proposal, the student should attempt to discuss these with the adviser and student before the meeting.

The student is responsible for scheduling the meeting (place and time) with the Department Administrative Coordinator (DAC). Requests are to be submitted via email to the DAC, 10 business days prior to the day of meeting, as follows:

Subject line: Request to Schedule First Committee Meeting

In the body of email include:
Student Name
CWID
Date of meeting:
Start AND End times of meeting:
Thesis Adviser Name:
Names of Committee Members:
Indicate if meeting mode is in-person or via Zoom (adviser must approve *mode* in advance):

The meeting should be scheduled for 2-3 hours to give the committee ample time to ask questions about the project. The adviser will guide the student in how to prepare for the meeting. There is no expectation that the student will provide refreshments for the committee.

2. The First Committee Meeting:

The meeting will begin with an oral presentation (~15-30 minutes) on the proposed research by the student. Questions from the committee will focus on the proposed research, experimental design, and the conceptual background relevant to the thesis project. The student should be able to establish that the project is feasible and that they are prepared to undertake the project.

The committee members also will review the GSP and, if necessary, suggest changes.

The First Committee Meeting typically will be less than 2 hours. It will conclude with an agreement between the adviser, committee members, and student regarding the proposal, determined by consensus of the committee. The outcome and committee recommendations will be recorded on the appropriate form. The possible outcomes are:

a. Project approval by committee (the proposal represents an appropriate and feasible/realistic project to obtain a M.S. thesis);

b. Project approval by committee with modifications of the thesis proposal, not requiring a second meeting; or

c. Substantive modifications of thesis proposal requiring an additional committee meeting.

The thesis adviser will (a) summarize the committee's recommendations on the form; (b) discuss with the student the recommendations of the committee and how to implement them; and (c) ensure that the student has a plan for completing the research. The thesis adviser will collect digital signatures of committee members and then send, by email, the signed recommendation form and the committee-approved GSP to the DAC and Biology Graduate Program Adviser.

3. After the First Committee Meeting:

Once the proposal is approved by the committee, the thesis adviser will monitor the student's progress to ensure satisfactory progress towards the degree and help solve any problems encountered. If substantive modifications were required at the first committee meeting (see outcome c above), the adviser should ensure that the student makes them in a timely fashion so that a revised proposal can be presented to the committee for approval.

If, after consultation with the thesis adviser, the student and adviser decide that the proposed thesis project is not feasible, modifications to the project will have to be made. Depending on the magnitude of the changes, they should be discussed with committee members and/or the student must schedule another committee meeting to present and discuss the new project.

B. Change of Adviser and Replacement/Addition of Committee Members

If a student wishes to change their thesis adviser or committee members, the student should first discuss this with the thesis adviser. If there is an irresolvable conflict, the student also should discuss the situation with the Biology Graduate Program Adviser. If a student decides to change advisers, the student must (a) find a new adviser who agrees to serve and (b) repeat the procedures for the First Committee Meeting. The Graduate Program Adviser (or their designee) will serve as the student's interim adviser and assist the student in identifying a new adviser. A memo from the Graduate Program Adviser noting the change in adviser should be added to the student's file. If a student cannot find a new adviser within 1 academic semester (summer not included) after changing advisers, the student will be subject to removal from the program.

If a committee member is to be added or replaced by another after the first committee meeting, the student shall first obtain the thesis adviser's approval of the need for addition or replacement and then the adviser's approval of the new committee member. The student shall first ensure that any committee member to be replaced is notified and then obtain consent from the new committee member to serve. The new committee member should then be supplied with a copy of the approved thesis proposal. The student should either meet with the committee member to discuss the proposed thesis research or convene another committee meeting depending on the wishes of the new committee member.

Any changes to the thesis committee must be approved by the Graduate Program Adviser and noted on the GSP. A copy of the revised GSP will be kept in the student's file.

C. Guidelines for the Second Thesis Committee Meeting

The **purpose** of the Second Committee Meeting is for the student to present the data gathered and progress made for the thesis project to date, and to obtain agreement from the committee (1) that research plans for the remaining parts of the project are appropriate and feasible, and (2) for an approximate timeline for finishing and defending the thesis. The meeting will provide the opportunity for the student to make necessary changes and will be an opportunity for the committee to outline the expectations for the completion and oral defense of the written thesis.

The **outcome** of the meeting will be approval of the progress report, thesis research plan, and approximate timeline as presented, or committee recommendations for modifications. If major modifications are recommended, or if research progress has been insufficient as determined by the consensus of the committee, then an additional committee meeting may be required with the same purpose as that of the Second Committee Meeting.

It is expected that the Second Committee Meeting will occur by the 3rd semester after the student has completed BIOL500A/B. Barring unforeseen circumstances, it is expected that the student will have the second committee meeting prior to the end of the 6th semester after entering the program. If this requirement is not met, the student risks being placed on administrative-academic notice and may be disqualified from the M.S. Biology program after 1 semester on probation. Because of the amount of time required for data analysis and thesis writing (see Timeline in Part E. below), the Second Committee Meeting should not occur in the same semester as the Thesis Defense, or late in the spring semester if a summer Thesis Defense has been approved.

1. Preparing for the Second Committee Meeting:

The student shall obtain permission from the thesis adviser before scheduling the Second Committee Meeting. The student will have made substantial progress with the research plan agreed upon during the previous committee meeting and will have collected a substantial amount of data. The student will prepare a thesis progress report of at least 2 pages in length plus appended data tables or figures as appropriate. This progress report should include a brief review of the conceptual background, hypotheses and rationale, experimental design, materials and methods, and results to date. The student should also prepare an expected timeline for completion of the research. A copy of the adviser-approved progress report and timeline should be given to all committee members **2 weeks** before the meeting.

The student will prepare an oral presentation (~15-30 minute) focusing on the data collected to date and will review this presentation with the thesis adviser prior to the meeting. It is expected that each committee member will critically read the progress report prior to the meeting. If a committee member finds major problems with the progress report, the committee member should attempt to discuss these with the adviser and student before the meeting.

The student is responsible for scheduling the meeting (place and time) with the Department Administrative Coordinator (DAC). Requests are to be submitted via email to the DAC, 10 business days prior to the day of meeting, as follows:

Subject line: Request to Schedule Second Committee Meeting

In the body of email include:
Student Name
CWID
Date of meeting:
Start AND End times of meeting:
Thesis Adviser Name:
Names of Committee Members:
Indicate if meeting mode is in-person or via Zoom (adviser must approve *mode* in advance):

The meeting should be scheduled for 2-3 hours to give the committee ample time to ask questions about the project. The adviser will guide the student in how to prepare for the meeting. There is no expectation that the student will provide refreshments for the committee.

2. The Second Committee Meeting:

The meeting should begin with an oral presentation (~15-30 minute) by the student on the research that has been completed to date and the plan to complete the thesis project. Questions from the committee should focus on the research progress, methods, and data analysis. The student should review the research progress that has been made and be able to discuss plans for the remaining research and data analysis.

The committee members will review the timeline for finishing the degree, progress made on the research and GSP and, if necessary, suggest changes. The committee will outline the expectations for the completion of the thesis project, oral defense of the written thesis, and the public presentation, and will discuss the format and potential subject areas for the oral defense. The area of concentration for the thesis defense will be identified. This will focus on the area of the thesis research but also will encompass related subject matter.

The Second Committee Meeting should usually not last more than 2 hours. It will conclude with an agreement between the adviser, committee members, and student regarding the remaining research plan and approximate timeline for finishing the thesis, determined by consensus of the committee. The outcome and committee recommendations will be recorded on the appropriate form. **The possible outcomes are**:

a. Approval by the committee of the thesis project and plans for the project's completion, including the projected timeline;

b. Approval by the committee of the thesis project and the plans for its completion with minor modifications (including a revision of the timeline), but not requiring an additional committee meeting; or

c. Substantive modifications of the thesis research plan requiring additional and substantial data gathering or major modifications in methods of data analysis. Such modifications will require a revision of the plan for completion, including the projected timeline, and an additional committee meeting.

The thesis adviser will (a) summarize the committee's recommendations on the form; (b) discuss with the student the recommendations and how to implement them; and (c) ensure that the student has a plan for completing the research within the timeline. The thesis adviser will collect digital signatures of committee members and then send, by email, the signed recommendation form to the DAC and Biology Graduate Program Adviser.

3. After the Second Committee Meeting:

Once the research plan and timeline have been approved by the committee, the thesis adviser will monitor the student's work to ensure satisfactory progress towards the degree and help solve any

problems encountered. If modifications in the research plan were required at the Second Committee Meeting, the Adviser should ensure that the student makes them in a timely fashion.

If, after consultation with the thesis adviser, the student and adviser decide that the research plan that was approved at the committee meeting is not feasible, modifications in the project and/or in the timeline will have to be made. Depending on the magnitude of the changes, they should be discussed with the committee and/or the student must schedule another committee meeting to present and discuss the modifications to the project and/or the timeline.

Assuming that the student has made good progress toward the degree, the student should officially file for a Graduation Check (forms available from Graduate Studies Office). This must be completed <u>several months</u> in advance of the expected graduation date (usually early January for spring or summer graduation; early August for winter).

D. Guidelines for the Thesis Defense and Public Presentation

The **purpose** of the Thesis Defense and Public Presentation is for the student to demonstrate competency on the subject matter of the thesis and to fulfill university requirements for a culminating experience for the M.S. degree. University requirements specify that each graduate program is to include a final evaluation or culminating experience that marks the end of the program. In Biology, the culminating experience consists of the following:

a. Completion of a research thesis acceptable to the adviser and committee;

b. Satisfactory performance on an oral examination commonly known as the **Thesis Defense**; and

c. An oral Public Presentation of the thesis.

At this time, the student should check to ensure that they have officially filed for the expected date of graduation (submitted graduation check paperwork) and that the GSP coursework is complete. Students must download and be familiar with the Thesis Manual from the Graduate Studies Office website to follow the advice and guidelines for formatting the thesis. This will save time and work for the Graduate Reader.

<u>Preparing for the Thesis Defense</u>:

At the Second Committee Meeting, the student and the committee will have identified areas of concentration that will serve as the basis for the Thesis Defense. These areas will be centered on the thesis research, but also will encompass related subject matter as determined by the committee. The student should discuss how to prepare for the defense and the public presentation with the thesis adviser. It is especially important that the student prepare for the defense so that they can demonstrate the extent of their knowledge and understanding of the areas of concentration.

There are 2 routes (A and B) for completing the Thesis Defense and Public Presentation. The route selected will be at the discretion of the adviser, in consultation with the student.

Regardless of the route chosen, **it is the responsibility of the student to submit a copy of the completed Thesis Defense and Oral Presentation Notice Form (see p. 33), to the DAC at least 10 working days prior to the date of the defense or presentation.** A digital copy of this form is available from the DAC.

1. Route A: Combined Public Presentation and Thesis Defense

The student will work with the thesis adviser to produce a complete and nearly final draft of the thesis. This draft is to contain all sections of the thesis and is to be prepared according to university thesis guidelines (see Graduate Thesis Manual). Once the draft is finished, the student should arrange with the adviser and committee to schedule the Thesis Defense. A 3- to 4-hour time block should be scheduled for the Public Presentation (1 hour) and Defense (2-3 hours).

Students must realize that producing a complete and nearly final draft of the thesis is very time-consuming, involving multiple drafts (see Section E below). Hence, students should plan well in advance and allocate sufficient time to complete this important phase of the graduate program. Different advisers will have different standards for determining whether a thesis draft is of sufficient quality and ready to be passed on to the student's thesis committee. Students must work closely with their thesis adviser to ensure that these standards are met.

For Route A, the student will first make a **Public Presentation**, field questions from the audience, and then undergo questioning by the thesis committee on the thesis and the areas of concentration during the thesis defense examination. **All Thesis Defenses and Public Presentations are to be scheduled during the normal course of the Fall and Spring semesters.** Students should be aware that the deadline for submitting the approved thesis to the Graduate Studies Office comes early in the semester. **Extraordinary circumstances** might dictate the need for the presentation and defense to take place during intersession or the summer. Scheduling during these periods is at the discretion of the adviser and thesis committee members, and **students should not expect to complete these final steps during Intersession or Summer.**

Once the presentation and defense are scheduled, the student should provide the committee members with an adviser-approved, complete, nearly final draft of the thesis **2 weeks** prior to the presentation/defense date. The student should then use the 2 weeks prior to the defense to study and prepare for the Public Presentation and the Thesis Defense. Committee members should prepare written comments on the thesis in advance and then give them, along with any oral comments made during the defense, to the student and adviser immediately afterward so that final changes can be made. Committee members can also provide written comments to the student in advance of the defense so that the student can be prepared to field questions.

Route A - Public Presentation:

The Public Presentation is to be scheduled for 1 hour, although the length of the presentation may vary. The expected duration of the presentation is 30 to 45 minutes. Following the presentation, members of the audience will be provided the opportunity to ask questions about the thesis work. The presentation should be geared for a more general audience but should contain the complete substance of the thesis work. **The adviser and all committee members are expected to attend the public presentation.** There is no expectation that the student will provide refreshments for the presentation.

Route A - Thesis Defense:

The Thesis Defense will take place immediately following the Public Presentation. Because the thesis has been presented, ordinarily the student will not be asked to make an additional presentation at the defense, but this will be at the adviser's discretion.

The student will be asked questions during the defense mostly about topics related to the thesis and the agreed-upon areas of concentration. Questions on topics outside these areas, however, are not inappropriate, although it is understood that the student may be less well prepared in areas other than those targeted for the defense.

The scheduled time for the Thesis Defense is 2-3 hours, although some defenses may either end prior to 3 hours or exceed this time limit at the discretion of the adviser and the committee members. There is no expectation that the student will provide refreshments for the defense.

Route A - Outcomes of the Public Presentation and Thesis Defense:

Satisfactory performance on the presentation and defense will be determined by consensus by the adviser and committee members. The criterion for deeming the performance satisfactory will be that the student demonstrated adequate expertise in the areas of concentration and all relevant facets of the thesis research and was able to make a clear public presentation of the thesis work.

If the performance on the presentation or the defense is determined to be unsatisfactory, the student will be given the opportunity to repeat whichever activity was considered deficient. If the student should fail to make a satisfactory Public Presentation or perform unsatisfactorily on the Thesis Defense a second time, the student will be placed on administrative-academic notice and disqualified from the program (i.e., the student will not be allowed to complete the degree). The student will have the opportunity to petition the Biology Graduate Advancement Committee for the opportunity to complete the presentation or defense a third and final time.

The thesis adviser will complete a form, signed by each committee member, indicating the outcomes of the presentation and the thesis defense. The form will be sent by email to the DAC and Biology Graduate Program Adviser. Satisfactory performance indicates that the student is ready to finalize the thesis. If the student performance on the presentation or defense is deemed to be unsatisfactory, this will be noted and a tentative timeline will be decided within which the student should repeat these activities. The adviser and committee members will inform the student of identified deficiencies in the presentation or defense performance. These deficiencies are to be summarized by the thesis adviser and recorded on the form.

2. Route B: Separation of Thesis Defense and Public Presentation

The student will work with the thesis adviser to produce a complete and nearly final draft of the thesis. This draft is to contain all sections of the thesis and is to be prepared according to university thesis guidelines (see Graduate Thesis Manual). Once the draft is finished, the student should arrange with the adviser and committee to schedule the Thesis Defense. A 2- to 3-hour time block should be scheduled for the defense (2-3 hours).

Students must realize that producing a complete and nearly final draft of the thesis is very time-consuming, involving multiple drafts (see Section E below). Hence, students should plan well in advance and allocate sufficient time to complete this important phase of the graduate program. Different advisers will have different standards for determining whether a thesis draft is of sufficient quality and ready to be passed on to the student's thesis committee. Students must work closely with their thesis adviser to ensure that these standards are met.

All Thesis Defenses and Public Presentations are to be scheduled during the normal course of the Fall and Spring semesters. Students should be aware that the deadline for submitting the final copy of the completed thesis to the Graduate Studies Office comes early in the semester. **Extraordinary circumstances** might dictate the need for the presentation and defense to take place during intersession or the summer. Scheduling during these periods is at the discretion of the adviser and thesis committee members, and **students should not expect to complete these final steps during Intersession or Summer.**

Once the defense is scheduled, the student should provide the committee members with an adviser-approved, complete, nearly final draft of the thesis **2 weeks** prior to the defense date. The student should then use the 2 weeks prior to the defense to study and prepare for the Thesis Defense. Committee members should prepare written comments on the thesis in advance and then give them, along with any oral comments made during the defense, to the student and adviser afterward so that final changes can be made. Committee members can also provide written comments to the student in advance of the defense so that the student can be prepared to field questions.

Route B - Thesis Defense:

The Thesis Defense is to take place prior to the Public Presentation. Under all but the most extraordinary of circumstances, there should be a least 1 day between the defense and the presentation (i.e., the defense could take place 1 day and the presentation on the next).

The defense is to begin with a presentation by the student, the length of which is to be determined by the adviser in consideration of the wishes of the committee. Because a longer Public Presentation of the thesis will follow at a later date, some defense presentations may be as short as 15 minutes; others may be as long as 45 minutes.

The student will be asked questions during the defense mostly about topics related to the thesis and the agreed-upon areas of concentration. Questions on topics outside these areas, however, are not inappropriate, although it is understood that the student may be less well prepared in areas other than those targeted for the defense.

The scheduled time for the Thesis Defense is 2-3 hours, although some defenses may either end prior to 3 hours or exceed this time limit at the discretion of the adviser and the committee members. Any serious deficiencies or issues should be clearly identified at this time. There is no expectation that the student will provide refreshments for the defense.

Route B - Outcome of the Thesis Defense:

Satisfactory performance on the Thesis Defense will be determined by consensus by the adviser and committee members. The criterion for deeming the performance satisfactory will be that the student demonstrated adequate expertise in the areas of concentration and all relevant facets of the thesis research.

If the performance on the defense is determined to be unsatisfactory, the student will be given the opportunity to repeat the defense, with a timeline decided by the thesis committee. If the student fails the defense a second time, the student will be placed on administrative-academic notice and disqualified from the program (i.e., the student will not be allowed to complete the degree). Students will have the opportunity to petition the Biology Graduate Advancement Committee for the opportunity to take the defense a third time.

The thesis adviser will complete a form, signed by each committee member, indicating the outcomes of the presentation and the thesis defense. The form will be sent by email to the DAC and Biology Graduate Program Adviser. Satisfactory performance indicates that the student is ready to finalize the thesis. If the student performance on the presentation or defense is deemed to be unsatisfactory, this will be noted and a tentative timeline will be decided within which the student should repeat these activities. The adviser and committee members will inform the student of identified deficiencies in the defense performance. These deficiencies are to be summarized by the thesis adviser and recorded on the form.

Route B - Public Presentation:

The Public Presentation should normally take place within 3 weeks of the Thesis Defense and no later than 1 semester afterward. The expectation is that the completed thesis will have been approved by the adviser and committee members prior to the presentation. The presentation can occur after the committee-approved thesis has been submitted to the Graduate Studies Office and can be scheduled as late as the last day of finals week in a given semester. **A copy of the final, revised thesis should be given to each committee member at least 3 days prior to the Public Presentation.** While developing the final thesis copy, the student should be sure to work closely with any committee member who identified significant issues during review of the thesis draft. This "final" copy of the thesis should be deemed acceptable by the adviser for meeting the requirements for the final thesis product. The expectation is that any changes suggested by committee members at this reading will be minor.

The Public Presentation is to be scheduled for 1 hour, although the length of the presentation may vary. The expected duration of the presentation is 30 to 45 minutes and will be followed by questions from the audience. This presentation should be geared for a more general audience than the presentation at the thesis defense. **The adviser and all committee members are expected to attend the public presentation.** There is no expectation that the student will provide refreshments.

E. Final Steps Toward The Degree and Projected Timeline

Following a successful Thesis Defense and Public Presentation and thesis defense, the student should follow the procedures on the Graduate Studies Office website for submitting the committee-approved thesis to the Graduate Reader for review. The thesis must use the template Word document provided by the Reader. It is the student's responsibility to ensure that the thesis is completed by the deadline, with proper formatting, and that its contents are accurate. The student and adviser should discuss and complete together the section regarding setting an embargo on availability of the thesis.

The Reader will distribute the form digitally to the committee for their approval and signatures. The Reader will review the thesis for formatting and return it to the student to make any necessary corrections or revisions. These should be completed immediately and returned to the Reader. Lastly, the student should provide the thesis adviser and the DAC with a digital copy (pdf) of the approved, final thesis, which will be made available on the departmental website.

For university information related to graduation, including fees, changing your graduation date, and commencement ceremonies, consult the Graduate Studies website.

Projected Timeline for Final Stages

This timeline is provided to make students fully aware of the time required to complete the final steps of the graduate program. This timeline is applicable for either the Fall or Spring semesters and assumes that the Second Committee Meeting was completed in an earlier semester.

Prior to start of semester: The student should file an application for a Graduation Check (forms available from Graduate Studies Office website), which must be completed several months in advance of the expected graduation date (usually early January for spring or summer graduation; early August for fall graduation).

Week 4 – Student send final thesis draft to the thesis adviser. This draft will, of course, represent previous exchanges of drafts between the adviser and student. However, this final draft is to include all sections and should be in a near-final state from the student's perspective.

Week 8 – Final, adviser-approved thesis draft is to be circulated to the committee members. This draft is to represent what the student and the adviser believe to be a complete, near-final draft of the thesis. [IF THIS DEADLINE IS NOT MET, THE STUDENT'S GRADUATION SHOULD RE-SCHEDULED FOR THE FOLLOWING SEMESTER.]

Week 10 – The presentation and defense (Route A) or defense (Route B) should take place by this time. For Route B, once the defense has been successfully completed, the presentation may be given up to the 16th week of the semester.

Week 12 – The final, adviser-approved copy of the thesis should be circulated to committee members no later than this week for their approval.

Week 13 – A Word copy of the committee-approved thesis is submitted digitally to the Graduate Thesis Reader by the published deadline.

Week 16 (Finals Week) – A pdf copy of the final thesis is to be sent via email to the thesis adviser and DAC. The last day of Finals Week is the last day that Route B Public Presentations can be given.

F. Thesis Defense and Public Presentation Notice Form

(*Submit a digital version of this form, available from the DAC, via e-mail)*

It is the student's responsibility to prepare for their Thesis Defense and Public Presentation. This process should begin at least 2 weeks in advance of the planned defense and presentation.

Below are the steps:

Step 1: Send an email to the Department Administrative Coordinator (DAC) to inform her of your plan for defense and presentation, include date/s and time/s.

Step 2: After she receives your email, you will be sent the Thesis Defense and Public Presentation Notice Form.

Step 3: Complete the form and return it to the DAC. Also attach a one digital image of you or your study organism, study site, etc. that will be included on the printed and digital announcements. **The completed form and photograph MUST be submitted at least 10 days prior to the scheduled date(s).**

Step 4: The DAC will reserve a room for your Defense and Public Presentation and inform you via email.

See sample form on the next page.

Thesis Defense-Presentation Notification Form

(Please request form and return completed form via email by contacting the DAC.)

You are expected to make your arrangements, i.e., determine day and time with your thesis committee and inquire about room availability. Please submit your completed Thesis Defense-Presentation Notification Form to the Department Administrative Coordinator, **10 business days prior to defense and/or presentation date**. This form must be typed and submitted via e-mail. **Please include a digital color photo or you or your study organism that is suitable for the public announcement**. All room reservations are tentative until this form is received and processed. Then reservations will be confirmed. The expected time for the defense is approximately 2-3 hours and the expected time for the presentation can be up to 1 hour. Room reservations are based on these expected timeframes.

The Department of Biological Science requires that an announcement of your thesis defense be distributed to the Biology full-time faculty **a minimum of 5 business days prior** to the date of your defense.

PLEASE COMPLETE INFORMATION BELOW:

Today's Date	Click here to enter text.
Full Name (include middle name, if applicable)	Click here to enter text.

Type of Defense (check one option):

Route A:	Public Presentation, followed immediately by Thesis Defense (not public) on the same day	☐
Route B:	Thesis Defense (not open to public), followed by Public Presentation on a different day	☐

Title of thesis, as it should appear, include caps, italics, etc.
Click here to enter text.

Route A		**Route B, Part 1**.	
Date **and Day**	Click here to enter text.	Date **and Day**	Click here to enter text.
Time of Defense	Click here to enter text.	Time of Defense	Click here to enter text.
Bldg / Room # (TBA by ofc)		Bldg / Room # (TBA by ofc)	
		Route B, Part 2.	
		Day and Date	Click here to enter text.
		Time of Presentation	Click here to enter text.
		Bldg / Room # (TBA by ofc)	

Thesis Adviser	Click here to enter text.
Committee Member	Click here to enter text.
Committee Member	Click here to enter text.
Committee Member	Click here to enter text.

G. GRAD700 Enrollment and Leave of Absence Policies
(February 2000; revised 5/23/2023)

In addition to remaining in Good Standing (p. 15), graduate students must maintain continuous enrollment during their tenure in the M.S. Biology program at CSU Fullerton. This means that, once a student is admitted to the graduate program, they cannot drop out for a semester without officially obtaining a Leave of Absence from the University. Students enroll through regular university registration procedures and pay listed graduate student tuition and fees while completing courses required for the Study Plan and working on their thesis.

GRAD700

A student may elect to enroll in GRAD700 through regular registration or through Extended Education (UEE) when they are in the very final stages of producing the thesis. This procedure allows the student to maintain continuous enrollment during the final phases of the graduate program. If enrollment in GRAD700 is through regular university registration procedures, the student will pay full fees and receive all student benefits. If enrollment is through UEE, the student will pay a reduced fee and **receive no university benefits other than library privileges.** The main advantage of enrolling in GRAD700 through UEE is financial because enrollment costs are less than those required for regular university registration.

NOTE: International students (on visas) who graduate in Summer terms are also required to maintain continuous enrollment during the summer of their graduation. GRAD700 through UEE is one mechanism for doing this. Contact the International Students Office for more information.

Considerations for Enrolling in GRAD700

Enrollment in GRAD700 is not automatic and requires both program and university approval. Moreover, enrollment in GRAD700 through UEE assumes that the student is no longer a user of departmental and university resources, including supplies, equipment, and services. THIS MEANS THAT GRADUATE STUDENTS ENROLLED IN GRAD700 THROUGH EXTENDED EDUCATION ARE NOT ELIGIBLE TO RECEIVE DEPARTMENTAL SUPPORT FOR SUPPLIES, MATERIALS, AND SERVICES.

Eligibility for GRAD700 Enrollment

Students are expected to understand fully the conditions required for GRAD700 enrollment before submitting the form for program approval. For students enrolling in GRAD700 through UEE, the student should consult the enrollment request form to determine if the student is eligible. To be eligible for GRAD700 (through either regular university registration procedures or Extended Education), the following requirements must be met to obtain approval:

1) **Study Plan**. Students must have enrolled in all coursework required for the Study Plan including BIOL500A/B, and all BIOL580, 598, and 599 units. NOTE: If a student has exceeded the time limit for graduation (5 or 7 years), the student will need to validate outdated courses on their Study Plan or take additional courses to replace outdated ones. If a course on the Study Plan is no longer valid, the student will not qualify for GRAD700 enrollment until outdated courses are validated or replaced with new courses.

2) **Laboratory and Field Work**. All thesis laboratory or field work must be completed (i.e., the student is not collecting data in the lab or field in support of their thesis research) and the Second Committee Meeting must be completed.

3) **Use of Facilities**. Student no longer requires access to any departmental or university services or facilities (e.g., computers, lab equipment, field gear) other than library resources.

4) **Adviser Assistance**. Assistance from the student's thesis adviser and committee members has been reduced to levels required to produce the final version of the written thesis and to prepare for defense and Public Presentation.

5) **GA/TA/Student Assistant Employment**. Student cannot be employed in a work-study program, but is eligible to be employed as a GA, ISA, or TA for the department.

Enrollment Procedures

To enroll in GRAD700 through UEE, a graduate student must first get permission from the thesis adviser and the program by filing the GRAD700 Enrollment Request Form, which is available from the Department Administrative Coordinator (DAC). **A new form must be filed each semester.** No such form is required for enrollment in GRAD700 through regular university procedures (i.e., with full fee payment). To obtain departmental approval for enrollment in GRAD700 through UEE, the student must do the following:

1) **Adviser Approval**. Read all the instructions. The student should answer the questions to the best of their ability and meet with the thesis adviser to review the checklist. All checklist questions must be answered accurately with Y or N. The thesis adviser must sign the form to indicate approval. Forms that are incomplete or not signed by both the student and thesis adviser will be returned.

2) **Verification of Eligibility by Biology Graduate Program Adviser**. Return the completed form to the DAC, who will review the responses on the cover sheet and forward it to the Biology Graduate Program Adviser for review and signature.

3) **Online enrollment**. Upon receiving confirmation from the Biology M.S. program, the Graduate Studies Office will email the student via the student's CSUF email account to confirm eligibility to enroll in GRAD700 online and with instructions to pay the fee.

Because these routing procedures can take time, students should complete the enrollment forms well in advance of the posted deadline. This is particularly important for students working as TAs, GAs or ISAs, who must be confirmed as enrolled before they can be officially hired.

Leave of Absence (adapted from University Catalog)

Graduate degree or credential students may request a Leave of Absence for up to 1 year. Conditionally classified or classified graduate students qualify for a leave if they have completed at least 6 credit hours' work toward the degree in residence at Cal State Fullerton. An online form to request a leave can be found on the Graduate Studies Office website. **Students should contact the DAC prior to applying for a leave so that she knows their plans and can advise on how to proceed.**

Any one of the following circumstances may be grounds for requesting a leave of absence:

- Illness or disability (permanent or temporary) or similar personal exigencies including pregnancy which make it impossible or inadvisable for a student to register for classes.
- Activities which enhance a student's professional career objectives.
- Active duty in the armed forces of the United States.
- Other reasons at the discretion of the Director of Graduate Studies.

After review by the Graduate Studies Office, a response is mailed to the student.

A first-time Leave of Absence of 1 semester only will normally be granted upon request for students who qualify and will not require an application for readmission to the university. Registration materials for the semester following the leave will be sent to the student.

Students requesting a subsequent leave or a leave longer than 1 semester may be required to provide appropriate documentation (e.g., doctor's recommendation, verification of employment).

A leave granted to a degree objective student preserves the election of curriculum rights regarding catalog requirements. **However, leaves of absence do not change the time limits for completion of the degree.**