

Biology Graduate Student Handbook

Fall 2020

TABLE OF CONTENTS:

Welcome Letter from Department Chair: Dr. Laura Burrus Biology Contacts

General Requirements for Degree (Red Tab)

- Biology Department Graduate Policy Sign at Orientation
- Requirements for MS Degree Biology
- Sample 2-Year Graduate Student Requirement Timeline
- Steps to Graduate Degree Checklist
- Thesis Committee FAQ
- Graduate Student Deadlines

Important Documents, Forms (Green Tab)

- List of Important Documents
- First Semester Check List
- Prospectus Guidelines
- Prospectus Outline
- Prospectus Rubric
- Thesis Prospectus Signature Sheet Example
- Advancement to Candidacy & Culminating Experience
- (ATC) Advancement to Candidacy Example
- Project Report Guidelines for Biology 895
- Proposal for Culminating Experience (895) Example
- Project Report Guidelines for Biology 898
- Proposal for Culminating Experience (898) Example
- Human and Animal Protections
- Day of your Defense Forms & Documents Needed
 - Report of Completion Example
 - o Graduate Division & Bursar's Receipts Example
 - Petition for Grade Change Example
- Culminating Experience Continuous Enrollment Information
- Applying for Graduation Information
- Biology Department FAQ

Manage Your Degree (Blue Tab)

- Individual Development Plan Information
- Implementing Individual Development Plan
- Individual Development Plan Form
- List of Electronic Resources to help make your own IDP
- American Society for Cell Biology Article "A shared vision of Mentoring from Different Perspectives"
- SF State Biology Mindset is the Growth Mindset
- Savvy Psychologist Article "What is impostor Syndrome?"

Funding Opportunities (Yellow Tab)





SF State Biology: Cultivating Biological and Workforce Diversity

Laura W. Burrus, Ph.D. *Professor, Chair*

June 14th, 2020

Dear Colleagues,

Welcome!!! We are delighted that you have chosen to pursue your Master's studies in our department. While California is fortunate to sustain tremendous biological diversity, the department of biology prides itself on being home to students, faculty and staff from diverse cultural and ethnic backgrounds. We welcome people from all cultures, socioeconomic backgrounds, races, ethnicities, nationality, genders, sexual orientations, ability levels, neurotypes, sizes, religions, ages, family structures, and political opinions. We welcome all aspiring biologists who want to make a positive contribution to their communities and to the world. We strongly believe in the potential for people from many different backgrounds to come together, learn from each other, and to make a difference.

I have been at SF State for over 23 yrs; this year is like no other. While your classwork will all be online, we are working hard to re-open our research endeavors. Fieldwork should resume within the next few weeks. We are hopeful that on campus research will resume not too long after that (albeit at a reduced level of activity). While we will all miss the excitement of being together in classes, please know that we are working hard on creating mechanisms that will allow you to connect with the University, the Department, and your fellow students.

Though some of you may be feeling very confident as you enter into this new chapter of your life, others may be apprehensive and uncertain about what to expect. One of the first things you will learn about the department is that the faculty and staff care deeply about our students. We are here to support your academic and personal growth. Please feel free to reach out to any of us if you have questions or need some support.

In addition to your faculty mentor, you will find that Dr. Michael Goldman (goldman@sfsu.edu; current grad coordinator) and Dr. Diana Chu (chud@sfsu.edu) the grad coordinator starting this fall), are excellent sources of information. All of our office staff (Giovanna, Jee, and Brianna) are here to help as well. Since we cannot yet invite you to visit the Department Office, we would like to ask you to e-mail us (biograd@sfsu.edu) with any questions you might have. Perhaps the greatest resource that you will find in our department is your cohort of classmates. Like you, these students hail from diverse backgrounds, have a variety of skills, and have voiced a willingness to work independently and

together to advance science. As they will be your scientific peers and colleagues for the next two years and beyond, we urge you to cultivate your relationships with these exceptional colleagues.

You are here today because we saw tremendous potential in you through your application for our graduate program. Faculty and staff are here to challenge, inspire, and work with you. We are looking forward to tapping into that potential, helping you grow as a critical thinker, and cultivating your curiosity as a biologist. Whether your long-term objective is to be involved in research, education, science policy, medicine, ecological restoration, biological diversity preservation, or any of a number of other careers, I urge you to discuss your career aspirations with your faculty mentor so that they can effectively guide you toward that goal.

Today, more than ever, the world needs people who support evidence-based policies and a willingness to make a difference through science. As a student in the Biology department, you will learn how to collect and critically evaluate scientific evidence. This experience will prepare you for a myriad of leadership positions in our society. It's a marvelous honor, but it comes with the obligation to act every day with the utmost integrity and professionalism. We are here to help you do that.

I will look forward to getting to know you and watching you grow over the next couple of years!

Best wishes,

Laura Burrus, Ph.D. Professor and Chair, Department of Biology 1600 Holloway Avenue San Francisco State University San Francisco, CA 94132-1722 lburrus@sfsu.edu http://userwww.sfsu.edu/~lburrus/

Courage • Life of the Mind • Equity • Community • Resilience

Principal Investigator, CSUPERB: Mechanisms of WNT1 Gradient Formation in the Chick Spinal Cord Principal Investigator, SF BUILD Mini-grant: Analysis of the Role of Wnt Palmitoylation in Triple Negative Breast Cancer Co-Director, HHMI Inclusive Excellence: Faculty Empowering Students in Transformations Co-Investigator, NSF STC: Center for Cellular Construction

Biology Graduate Program Contacts

Graduate Coordinator

Dr. Diana Chu <u>chud@sfsu.edu</u> (415) 405-3487

Coordinator for Cell Molecular Biology

Dr. Diana Chu <u>chud@sfsu.edu</u> (415) 405-3487

Coordinator for Ecology, Evolution, & Conservation Biology (Renamed Integrative Biology – Starting Fall 2020 Dr. Andy Zink <u>zink@sfsu.edu</u> (415) 338-6997

Coordinator for Marine Biology

Dr. Karen Crow <u>crow@sfsu.edu</u> (415) 405-2760

Coordinator for Microbiology Dr. Diana Chu <u>chud@sfsu.edu</u> (415) 405-3487

Coordinator for Physiology and Behavior

Dr. Andy Zink zink@sfsu.edu (415) 338-6997

Coordinator for Professional Science Master (PSM) Dr. Lily Chen <u>lilychen@sfsu.edu</u> (415) 338-6763

Graduate Program Administrator

Giovanna Tuccori <u>gmt@sfsu.edu</u> (415) 405-3591

General Requirements for Degree

Biology Department Graduate Policy

Department of Biology Graduate Policy

The following policies have been adopted by the Faculty of Biology, San Francisco State University. They are within, and sometimes may extend beyond, the policies set forth by the SFSU Graduate Division (http://bulletin.sfsu.edu/graduateeducation/academic-policies-procedures/). The Faculty of Biology at San Francisco State University have discretion over all graduate matters in the department. Faculty set policy and expectations, and have final say over any decisions regarding graduate programs in the department. The responsibility of adhering to the policy falls on the student, advisor, and committee members for that student's thesis (both faculty and non-faculty members).

All Graduate Students in Biology must sign a submitted copy of the policy attesting that they are aware of and accept all expectations of the policy. The signed copy will be retained in the student's file within the Biology Department Office.

Acceptance into the Graduate Program in Biology

Minimum Qualifications:

- Bachelor's degree (not necessarily in Biology)
- Lower and upper division course work equivalent to that expected from a bachelor's degree in the area of biology in which the student plans to do graduate work.
- Minimum grade point average of 3.0 in last 60 semester units (90 quarter units).
- Graduate Record Exam is not required (it can be submitted, but it is not used in evaluation for acceptance).
- Acceptance by an SFSU Biology Tenured/Tenure-Track Professor, CAS Research Professor, or RTC Research Professor. No student will be accepted into the program without a sponsoring advisor. The accepting advisor will retain ultimate responsibility for all phases of the student's graduate career.

Conditionally Classified Graduate Students

Students who are accepted into the Department of Biology are considered Classified Graduate Students. Occasionally classified graduate students are accepted conditionally with conditions set by the graduate coordinator and advisor. Graduate students must satisfy all of these conditions prior to filing their Advancement to Candidacy (ATC) form. Courses used to fulfill conditions cannot be used to fulfill the 30 units required for graduation.

Progress in the Program

Research

Graduate students must make continuous satisfactory progress toward their degree by completing a minimum of six units of coursework/research each year.

Graduate students should discuss with their advisor the number of research units to be taken each semester and the expectations for work to be completed for these units before enrolling in Biology 897 (research units that can include lab, library, and/or field research). It is the responsibility of the advisor to determine the grading system for Biology 897. This should be discussed clearly with the student prior to enrolling in the course for that semester.

Grades

In line with University policy, SFSU Graduate students must maintain a 3.0 (minimum) grade point average throughout their graduate career.

Academic Probation

Students who do not maintain a minimum GPA of 3.0 are placed on academic probation for one semester. Students who fail to recover from academic probation the semester they are on probation are subject to declassification (i.e., dismissal from the Biology Graduate Program).

Continuous enrollment in the University

To remain a continuing student, all SFSU students (including Graduate Students) are required to enroll at least every other semester. Graduate students who remain unenrolled for more than one consecutive semester are dropped from the University, hence from the graduate program in biology. To be readmitted, the student must reapply to the University.

Roles of the Student and Faculty Advisor

The Department of Biology seeks to foster an environment of open discussion of all issues at all times. Faculty advisors and graduate students have a right and an obligation to express their own expectations and to hear the expectations of the other party. Effective, early, and regular communication will generally eliminate or defuse disputes between graduate students and advisors, and bring clarity to issues of concern.

- Graduate students should orient themselves to department policy regulations and expectations. Students are also expected to become familiar with university-wide policies.
- The Faculty Advisor is expected to help guide the student to define the nature and scope of their thesis project and maintain a clear and helpful line of communication, with special regard to the Faculty Advisor's and thesis committee's expectations of the student. In particular, the Faculty Advisor

should explain specific expectations for signing off on a student's M.S. thesis or project report in writing. This should occur during the initial application process and upon acceptance into the Faculty Advisor's lab. These expectations can be adjusted by mutual agreement between the student and advisor during the course of the student's study as appropriate and should be documented in writing.

- When recruiting Committee Members, both the student and the Faculty Advisor must fully communicate these (above) expectations to potential Committee members before that person makes the decision to join the committee.
- The Faculty Advisor is expected to clearly communicate the availability and conditions of financial support for research and living expenses during the M.S. thesis during the initial application process and during the thesis project.
- Faculty Advisors are expected to help to advise students on course selection and course load each semester.
- Students are expected to organize at least one thesis committee meeting during their second or third semester. The purpose of this meeting is to defend the prospectus and obtain general agreement on the scope of the thesis project. The prospectus must therefore be sent to the committee before this meeting. The Faculty Advisor will provide timely feedback on the prospectus.
- Students and Faculty Advisors are expected to sign forms in a timely manner, including the Advancement to Candidacy (ATC), Culminating Experience Proposal Form (895: Field Study or Applied Research OR 898: Thesis), Animal or Human Subjects Protocol Forms, and Thesis Prospectus.
- Faculty Advisors are expected to support student efforts in seeking funding to support research and education. They are expected to promote professional development of graduate students, including participation in workshops, attendance at professional meetings, presentation of posters and papers, and communication with colleagues in their field. They are expected to provide timely feedback in helping student develop funding applications.
- The Faculty Advisor shall have complete discretion over the content of the graduate student's thesis research, with the understanding that the committee sets a minimum expectation as well as a maximum beyond which the student can expect to have graduated. The general expectation is that students will graduate in five semesters or less. After six semesters there will be a mandatory committee meeting at the beginning of each academic year to discuss progress.
- If the student or Faculty Advisor fails to meet these expectations, either party should consult with a Graduate Advisor (a member of the Graduate Affairs

Committee) within their emphasis or the Graduate Coordinator in the Department. A role of the Graduate Advisors or the Graduate Coordinator is to facilitate communication between students, Faculty Advisors, and Committee Members and provide advice on Department and University Policies.

Committee Membership

- Minimum of three Committee Members (this exceeds the SFSU minimum of two per university policy) and a maximum of five committee members
- At least two Committee members must be SFSU Tenured/Tenure-track Professors of Biology, or CAS Research Professors, or RTC Research Professors
- Any outside readers (not falling into the above categories) must be placed as the third signature on the thesis (per university policy)
- Committee Members have a responsibility to attend at least one committee meeting (in tandem with thesis prospectus), provide feedback on the thesis prospectus, attend the thesis defense, and provide feedback on the thesis.
- The student should communicate with all Committee Members well in advance about scheduling meetings, signing documents, and availability for providing feedback.
- Committee members have a responsibility to support the advisor in enforcing expectations of the student and a responsibility to support the student if the advisor is not meeting their responsibilities or agreed upon expectations.
- The Graduate Coordinator, Graduate Advisors, and/or Chair of Biology are available to facilitate communication amongst the student, Faculty Advisor, and Committee Members. They can also provide advice on Department and University Policies.

Changing Faculty Advisors

There are occasional situations in which the advisor-student relationship may be terminated prior to completion of the M.S. degree. These are...

Students Leaving Labs Voluntarily

Graduate students are not obligated by the Department of Biology to remain under the direction of the advisor who accepted them; however, a student who leaves an advisor shall be allowed one full semester to relocate to another advisor. It is the student's responsibility to find a new advisor. If the student has not succeeded in doing so within one full semester (i.e., the full semester immediately following the student's departure from the original advisor's directorship), the Graduate Committee shall initiate declassification procedures under the aegis of "...performance, progress ... judged by appropriate University authorities to be unsatisfactory..." Students who elect to leave an advisor's directorship must notify the former advisor and the Department Graduate Coordinator in writing. The graduate coordinator and department chair will ensure that the student, the former advisor, and the future advisor sign a mutually agreed-on document acknowledging the circumstances and accepting the terms of the Biology Graduate policy.

Students Who Are Dismissed from Graduate Labs by the Advisor

Biology faculty advisors are not obligated to retain graduate students who fail to meet the advisor's (or department's) requirements, standards, and expectations. If an advisor determines that a graduate student has failed to meet the standards of that advisor's lab, s/he may dismiss the student from the lab.

Failure to meet the advisor's standards includes, but is not limited to:

- Repeated failure to meet expectations of scholarship and deadlines set by the advisor. This failure should be documented in writing.
- Disruption of the educational and/or interpersonal environment of the lab.
- Unresolvable differences (personal and/or professional) with the advisor.
- Research misconduct such as falsification, fabrication, or plagiarism in proposing, conducting or reviewing research, or in reporting research results.

Prior to dismissing a graduate student from a lab, the advisor and student should make every attempt to resolve the problem. The student or Faculty Advisor can ask for assistance from the Graduate Coordinator to facilitate communication.

Suitable written warning of potential dismissal of the student should be given well in advance. Faculty who dismiss students from their directorship must notify the student and the Graduate Coordinator in writing. A student who is dismissed by an advisor shall be allowed one full semester to relocate to another advisor. It is the student's responsibility to find a new advisor. If the student has not succeeded in doing so within one semester (i.e., the full semester immediately following the student's departure from the advisor's directorship), the Graduate Committee shall initiate declassification procedures under the aegis of "…performance, progress … judged by appropriate University authorities to be unsatisfactory…"

Graduate Advisors, the Graduate Coordinator and Department Chair will ensure that the student, the former advisor, and the future advisor sign a mutually agreed-on document acknowledging the circumstances and accepting the terms of the Biology Graduate policy.

[Note: If a graduate student that has already advanced to candidacy relocates to another advisor, irrespective of reason, s/he must file a "Revised Culminating Experience Proposal" form. This does not apply to students who have not yet filed a "Culminating Experience Proposal" form.]

Rights of Students and Advisors

Ownership of Research

All research, data, products, records, and intellectual property are the property of the principal investigator (faculty member) of the lab where the research was initiated regardless of whether the student changes labs, or institutions. Therefore, if a student leaves a lab, they will not be able to continue the research initiated in the lab they are leaving without permission from the former advisor. If the advisor has an obligation to an agency or other resource that is funding research involving a student's thesis, the nature of this obligation must be made clear to the student prior to the student beginning her/his thesis work, as these obligations will apply to the student as well. The Graduate Coordinator (and/or members of the Graduate Affairs Committee) and Department Chair are available to mediate/arbitrate issues regarding the change in research projects, and will ensure that the student, the former advisor, and the future advisor sign a mutually agreed on document acknowledging the circumstances and accepting the terms of the Biology Graduate policy. Exceptions to this policy can be made by mutual agreement between the advisors and student and should be made in writing before work begins in the new lab.

Authorship

Each advisor should set a policy on authorship including order of authors and articulate it to each new graduate student. Timely progress is expected toward publication of thesis research that is part of the advisor's own research program. If a student fails to make timely progress toward publication, the advisor may choose to assume an active authorship role and, accordingly, refine the status of authorship and/or orders of authors.

Thesis Copyright

Graduate students are allowed to copyright their thesis; however, copyright issues must be discussed openly with the advisor and other faculty involved prior to the thesis being filed.

Harassment and Misconduct

The Department of Biology adheres completely to the Sexual Assault Policy, the Sexual Harassment Policy and Procedures, and Student Conduct/Discipline Policy as set forth in the University Bulletin. Charges of violation of these policies shall be forwarded to the appropriate campus office.

Appeals Procedures

The role of the Department of Biology Graduate Affairs Committee in the appeals procedures is to ensure that all proper steps were taken and that adequate communication was made among all parties concerned. The Graduate Affairs Committee's role is to interpret and communicate Department and University policy to the parties concerned. The Graduate Committee shall decide if an appeal warrants a personal meeting with the parties concerned. Once apprised of an issue warranting the attention of the Graduate Committee, the Committee shall make every attempt to act and respond within a two-week period during the normal semester. At the University level, the Dean of Graduate Affairs can also available for consultation and advisement to all parties.

The Faculty of the Department of Biology has read and approved this Graduate Policy.

Biology Department Graduate Policy Signature Page Biology Department Copy

I have read the Department of Biology Graduate Policy provided to me in the Biology Graduate Student Handbook. These policies have been adopted by the Faculty of Biology, San Francisco State University. They are within, and sometimes may extend beyond, the policies set forth by the SFSU Graduate Division.

By signing this form, I attest that I have read the Department of Biology Graduate Policies. By signing, I also affirm that I am aware of and accept all expectations of the policy.

The signed copy of this page will be retained in my student file in the Biology Department Office.

 Signature
 Print your name here
 Date

Give this signature page to the Biology Graduate Secretary Giovanna Tuccori: gmt@sfsu.edu

Sample 2-Year Graduate Student Requirement Timeline

This is based on a two-year model. Individual students may take longer to complete their research.

First Semester

- 1. Take the First level English Proficiency Exam given at Biology Department Orientation.
- 2. Sign the Department Graduate Student Policy at the Biology Department Orientation.
- 3. Move from Conditionally Classified to Unconditionally Classified (consult with your advisor about conditions specific to your situation).
- 4. File an Animal/Human Subjects Protocol Form (if required). Note that filing this form requires that you file your Culminating Experience Form at the same time. *Discuss this with your advisor immediately if you work with vertebrate animals*.
- 5. Meet with your research advisor regularly.
- 6. Assemble a thesis/project committee and communicate with your committee about your goals and timeline.

Second Semester

- 1. Meet with your research advisor regularly.
- 2. Assemble your thesis project committee. Get their advice about your project.
- 3. File your Thesis/Project Prospectus that has been approved by your thesis/project committee. The approved prospectus is due June 1st.

Third Semester

- 1. Meet with your research advisor regularly.
- 2. File your Advancement to Candidacy (ATC) form before October 1st.
- 3. File your Culminating Experience form before October 1st.

Fourth Semester

- 1. Enroll in Biology 895 or 898. You *must* have your ATC and Culminating Experience forms on file at the Graduate Division to be permitted to enroll in Biology 895 or 898.
- 2. Meet with your thesis/project committee.
- 3. Write, Defend, and File your Master's thesis/project.
- 4. Complete the Report of Completion and a Grade Change form (if necessary). This is the final stage of completing your M.S. Degree.
- 5. Apply to graduate.

Requirements for Degree

1st Choice SFSU Biology Graduate Program Degree Requirements Starting Fall 2020

3 concentrations: <u>One Master's of Science degree in Biology</u>

> <u>Cell and Molecular Biology (CMB) Concentration</u> - merging Microbiology and the CMB stem cell emphasis

<u>Physiology and Behavior (PB) Concentration</u> - renaming Physiology and Behavioral Biology

Integrative Biology (IB) Concentration

- renaming Ecology, Evolution and Conservation Biology (and merging Marine Biology)

Curriculum: 30 units required for the degree, 15 units shared between concentrations

Core Requirements (for all concentrations)

3 units: BIOL700 Introduction to Fundamental Research Skills (NEW course): Students are introduced to the theory and practice of skills used by research scientists that include: research literature searches, basic concepts in visualizing and interpreting data, analyzing conclusions of research articles, ethics, and safety.

2 units: BIOL870 Biology Colloquium: Students analyze oral presentations of recent developments in biological research presented by outside speakers. Student participate in discussion with the speaker and learn to write critiques.

6 units: BIOL 897 Research: Applied practice of research skills in the laboratory or field.

4 units Culminating Experience

Culminating Experience is a choice of either of these two courses. Students present their final research findings in written form – either a format suitable for publication in journals that are applicable to the scientific discipline OR a thesis.

BIOL 895 Research Project (Units: 4) OR BIOL 898 Master's Thesis (Units: 4) **Also required** (these requirements differentiate the concentrations from one another):

For Cell and Molecular Biology *Concentration:* 2 units of BIOL 861 Advances in Cell and Molecular Biology Prerequisite: Graduate standing or consent of instructor. Topic to be specified in Class Schedule. May be repeated with different topics.

For Physiology and Behavioral Biology Concentration:
2 units of BIOL 865 Advances in Physiology and Behavioral Biology
Prerequisite: Graduate standing or consent of instructor.
Topic to be specified in Class Schedule. May be repeated with different topics.

For Integrative Biology Concentration:
2 units of BIOL 862 Advances in Ecology and Systematic Biology
Prerequisite: Graduate standing or consent of instructor.
Topic to be specified in Class Schedule. May be repeated with different topics.

Total Requirements for each concentration = 17 units

13 units of Electives

Students would choose courses across the department upon advisement with their research advisor that is tailored to the student's scientific discipline, research project, experience, and career goals.

Note:

-We are allowing 2 units of BIOL881 to be used on the Advancement to Candidacy (ATC) form

-Max of 6 units for BIOL897 to be used on the ATC is being kept the same.

2nd Choice SFSU Biology Graduate Program Degree Requirements Prior to Fall 2020

- Cell and Molecular Biology
- Ecology, Evolution, and Conservation Biology
- Marine Biology
- Microbiology
- Physiology and Behavior
- Professional Science Master with a Concentration in Biotechnology
- Professional Science Master with a Concentration in Stem Cell

30 units

- 15 units from exclusively graduate courses (700-899 level)
 - <u>A minimum of 4 units must be</u> from courses (Biology 860-865)
 These are seminar courses that specifically require a 45 minute presentation.
 - <u>A maximum of 4 units may come</u> from colloquium (Biology 870, 871 or 872)
 - <u>A maximum of 6 units may be</u> Independent research (Biology 897)
- 6 units may be from graduate courses or paired courses (grad students must always register for the graduate member of the paired course)
- A maximum of 9 units may come from upper division courses
- You must enroll in Biology 898 (4 units, formal) or Biology 895 (4 units, unstructured) the semester you want to graduate (except summer).

General Program Requirements and Information

Selection of Committee

- The committee must consist of a minimum of two and a maximum of five members. You should pick individuals with scientific expertise that can help you with your project and/or faculty that have had you in courses that can get to know you and write recommendation letters later.
- The chair and the second member of your committee must hold tenured/tenure-track faculty appointments in your major department.
- In circumstances where special expertise is available in another department, the graduate dean may authorize a designated tenured/tenure-track faculty member from a related department to serve as second reader.
- With special permission, some long-term lecturers with terminal degrees in their field or with special expertise may serve as the second reviewer provided their curriculum vitae is on file in the Division of Graduate Studies.
- The third member of a committee may be a lecturer or from outside the major department or university. Lectures or readers outside the university must hold a PhDs and have a current curriculum vitae on file in the Division of Graduate Studies.
- To officially change the composition of your committee, you must submit a petition.

Thesis Prospectus

- Expectations vary by professor check with your advisor and also see outline provided
- Due: June 1 (for graduation the following spring semester) to the Biology Department Secretary.

Advancement to Candidacy (ATC)

- Identifies ALL courses you have taken or plan to take to complete degree requirements.
- Must be filed to the Biology Department Secretary *the semester before you enroll* in 895 or 898 (not in summer), typically your third semester. The written thesis is fulfilled by submitting EITHER Biology 895 OR 898. Please consult with your research advisor to determine which is the most appropriate for your field and your project.
- Due: October 1 (for graduation the following spring semester) to the Biology Department Administrator.

Culminating Experience Form

- Title of your thesis (12 words or less)
- Summary of thesis project to Graduate Division
- Thesis committee established

- If your thesis research requires an Animal/Human Subjects Protocol Form (see below), the Culminating Experience Form must be filed with the Protocol.
- Due: October 1 (for graduation the following spring semester) to the Biology Department Secretary. Due: November 1 (to division of graduate studies)

Animal/Human Subjects Protocol Form

- *Only applies to research using vertebrates.* Consult with your research advisor in the 1st semester to determine if this form is necessary for your degree progress.
- File an approved Animal (or Human, when applicable) Subjects Protocol Form prior to your conducting any work on vertebrate specimens: <u>http://biology.sfsu.edu/content/animal-and-human-subjects-protocol-form</u>

Report of Completion

• The *Report of Completion* must be signed by all committee members. It is required that you *submit your thesis at least 2 weeks prior to your defense date,* unless previously arranged with each of them.

The written thesis is fulfilled by submitting EITHER Biology 895 OR 898. Please consult with your research advisor *the semester before completing your ATC and CE forms* to determine which is the most appropriate for your field and your project.

- **Biology 895 (Field Work or Research Project):** (4 units) unique to each project, but often quite succinct and in formal publication format. Start work in consultation with your advisor and committee to determine exact format.
- **Biology 898 (Thesis)** (4 units) specific formatting required by the Graduate Division (e.g. margins, type of paper, etc.) and generally very comprehensive

Thesis Defense

- It is required that you post fliers announcing your defense in Hensill Hall at least one week prior to the defense date.
- Work with your committee to schedule a date for your thesis defense. Reserve a room for your defense with the Biology Graduate Secretary.
- *Report of Completion of Specified Graduate Program Requirements* form (this form is initiated by the head of your committee). This form will be electronically signed by your committee on the day of your defense.
- Please see the biology department graduate administrator to review what you will need on the day of your defense.

Steps to Graduate Degree Checklist

Your First Semester

- □ First Year English Proficiency Exam (during biology department orientation).
- □ Sign the Graduate Student Policy (during biology department orientation).
- Meet with your program advisor:
 Name: ______ Email: ______
 - Estimate plan of course work from first semester to graduation to fulfill degree requirements (see example 2-year plan).
 - Make preliminary plan for expected date of graduation. Establish a timeline for completing research and course goals to fulfill graduation requirements.
 - Estimate from current deadlines listed on the Biology and graduate studies websites when you will need to:
 - ✓ Submit ATC (your third semester)
 - ✓ Submit Culminating Experience Proposal (your third semester) (with Human or Animal Research Protocol, if required)
 - ✓ Enroll in Culminating Experience Course (the semester you wish to graduate)
 - Assemble a Thesis Committee
 - Decide upon Biology 895 Research Project or Biology 898 Thesis

Each semester until you graduate:

- □ Check online Class Schedule or Academic Calendar. Mark dates on your Calendar for Add/Drop /Withdrawal Deadline.
- □ Meet with your Advisor (at least twice every semester) to discuss progress of coursework, research, and future goals.
- □ Adjust estimates of time to graduation and plan for ATC, CE, and/or Application for Award of Degree.
- $\hfill\square$ Consult with your committee members at least once per year.

The semester before you plan to enroll in your culminating experience (typically 3rd semester)

- □ **Complete and submit your Thesis Prospectus with committee approval.** Date Submitted: ______
- Submit Advancement to Candidacy (ATC) Date Submitted: ______
- Submit Culminating Experience Proposal (Biology 895 OR 898) (with Human or Animal Research Protocol, if necessary)
 Date Submitted: ______

Keep copies of the above documents.

Your Last Semester

- □ Enroll in Culminating Experience Course (Biology 895 or Biology 898)
- $\hfill\square$ Complete oral defense
 - Assemble Committee
 - Book a Room
 - File Culminating Experience: Thesis, Research Project, and Report of Completion form, (request a Change of Grade form if Culminating Experience extended your grace semester.
- □ Complete the Biology Exit Survey on the Biology Website.
- Submit Application for Award of Graduate Degree and pay fee.
 See the Graduate Studies website for deadlines.
 http://grad.sfsu.edu/grad/content/current-students/award-degree

IMPORTANT

□ If you do not complete your Biology 895 or 898 course within a 2-semesters period, you are required to enroll in CEL 499 each proceeding semester until you have completed your requirement.

Thesis Committee FAQs

Selection of Culminating Experience Committee

- The committee must consist of a minimum of two and a maximum of five members.
- The chair and the second member of your committee must hold tenured/tenure-track faculty appointments in your major department.
- In circumstances where special expertise is available in another department, the graduate dean may authorize a designated tenured/tenure-track faculty member from a related department to serve as second reader.
- With special permission, some long-term lecturers with terminal degrees in their field or with special expertise may serve as the second reviewer provided their curriculum vitae is on file in the Division of Graduate Studies.
- The third member of a committee may be a lecturer or from outside the major department or university. Lectures or readers outside the university must have a current curriculum vitae on file in the Division of Graduate Studies.
- To officially change the composition of your committee, you must submit a Petition for GAP Substitution or Committee Revision to GradStop (ADM 250)

What is the Thesis Committee?

The Thesis (or Graduate) Committee consists of three faculty members who can advise you on your academic progress and research while at SFSU. It is composed of 3 faculty members (2 must be SFSU tenure-track faculty in Biology) that can advise you on the research you are conducting for your thesis.

Who should be on my Thesis Committee?

Your research advisor should be the Major Advisor or primary committee member. The Major Advisor must be a faculty member of the SFSU Biology Department, Research Faculty at the California Academy of Sciences, or Faculty at the Romberg Tiburon Center.

Then you get to choose the other two people on your committee. Your committee must have at least two tenured or tenure-track faculty of Biology at SFSU. The 3rd may be from another department like Chemistry or another institution like UCSF or UC Berkeley. If one of your committee members is from another institution, you must provide a CV for the individual when filing your ATC and CE forms.

Things to consider in choosing your committee members:

- They advise you about your research project. Thus, you can choose people based on scientific expertise. Who will be able to give you additional insights that your research advisor might not? Work with your advisor to identify people with the expertise you will need to put together a strong research project.
- 2) They are great people to write your recommendation letters. They will get to know your research by reading and approving your prospectus and thesis. They will interact with you at committee meetings and other events. You might also have had them as an instructor in a course where you demonstrated your capabilities.
- 3) They are advocates for you. The reason there is a committee is so that there are 3 people who can help decide what is fair and reasonable in any situation. If one of your committee members is not being reasonable, you can discuss this with your other committee members.

When should I form my Thesis Committee?

You should begin to form your committee during the first semester. This will ensure that you can take advantage of their advice regarding your research project.

You are REQUIRED to form your graduate committee by the end of your 2nd semester. Your committee must approve your theses prospectus by June 1.

How do I ask people to be on my committee?

Start by emailing your potential thesis committee member; introduce yourself, tell them what lab you are in, and about your research interests. Ask if he/she would be willing to serve on your committee and describe WHY you have asked this person in particular. Include a CV and research description if you can with your original inquiry and ask to set up a short meeting to discuss it. Follow up in a week or so if you do not hear back. Many faculty members are busy so they need reminders.

When should I meet with my Committee?

1st semester: Meet with your major advisor frequently and define your research project.

2nd **semester:** form your research committee and have at least one committee meeting to go over your research plan and prospectus.

You need to give your committee at least TWO WEEKS to read your prospectus. They will give you feedback and comments that you will need to address. After you have revised your prospectus to their approval, then you can get their signatures.

Remember that a committee meeting is beneficial to YOU. You get practice presenting your work to experts. Your committee will help you to refine your plans to an achievable and effective research plan. Having your committee together helps form reasonable expectations for completion.

3rd semester: Meet with your committee and discuss your results and your timeline for graduating. Be sure to talk with them about your long-term career goals to get advice.

4th **semester:** Inform your committee about your timeline for giving them your written thesis. Your committee members need <u>TWO WEEKS</u> to read your thesis BEFORE your oral defense.

Work with your committee to schedule a date for your thesis defense. Plan to do this at least TWO MONTHS before you plan to defend to make sure you have a room available to defend and that you have reserved a time that all of your committee members are available.

Do your thesis defense and obtain their signatures of approval.

Graduate Student Deadlines

Thesis Prospectus

Typically due at the end of your second semester, no later than June 1. Please communicate with your committee members about their schedules at least <u>one month</u> in advance. Plan to give them **a minimum of 2 weeks** to review and approve your thesis prospectus.

Advancement to Candidacy (ATC) and Proposal for Culminating Experience (PCE)

These forms are due the semester prior to the semester you plan to graduate. If your goal is to graduate in spring 2021, these forms are due fall 2020. The ATC and PCE are due for department review 1-month before they are due to the division of graduate studies.

- In the fall semester due to the department October 1 and Graduate division November 1.
- In the spring semester, due to the department March 1 and Graduate division April 1.

The department will send out reminders.

For additional deadline, please visit the Division of Graduate Studies, Continuing Student deadline page:

http://grad.sfsu.edu/content/continuing-student-deadlines

Important

Documents Forms Examples

List of Important Documents

First Semester Check List

Thesis Prospectus

- Guidelines
- Outline
- Rubric
- Thesis Coversheet

(ATC) Advancement to Candidacy Form - Example

Culminating Experience

Biology 895

- 895 Project Report Guidelines
- Proposal Culminating Experience 895 Example

Biology 898

- 898 Project Report Guidelines
- Proposal Culminating Experience 895 Example

Research Protocol Guidelines

Day of Defense Paperwork

For 895

- Report of Completion

For 898

- Report of Completion
- Graduate Division & Bursar's Receipt

Grade Change

- Grade change form is required if you did complete your defense the semester you registered for your culminating experience.



First Semester Check off List

Please complete this form by Feb 1st and turn it in to the Biology Office.

Student Name:

Major Advisor Name:

Please sign below after the student and advisor have reviewed the student's Independent Development Plan (IDP) or an equivalent document for advisement on plans for the student to achieve his/her short-term and long-term goals.

Student:	
Advisor:	
Date(s):	

Please list your Committee Members. Note if they have confirmed (C) or if they are pending (P):

Prospectus Completion Date (the prospectus is due June 1):

Expected Graduation Date:

Department of Biology Graduate Thesis/Research Project Prospectus

The Prospectus has two important roles.

1) It serves as the second-level English Proficiency assessment required of all CSU graduate students.

2) It articulates the graduate student's research plan and progress and enables the student to receive constructive feedback from their graduate committee members.

Please be sure to meet with your research advisor for guidelines specific to your field of study.

Requirements

Prior to advancement to candidacy (but usually not earlier than the second semester), each student must write a prospectus for their thesis/research project.

- The thesis/research project prospectus should be at least 5 single-spaced pages and not more than 10.
- A timeline must be included that indicates when each section of the proposed work willbe completed.
- A description of any preliminary work completed.
- Provide page numbers and relevant references.
- The thesis advisor shall determine the format of the prospectus.
- The prospectus must be written using standard 8.5" x 11" page size, 12point, Times New Roman font OR 11-point Arial font, 1" margins on all sides, and must be single spaced or greater. References, figure legends, and footnotes may be a smaller font, no less than 10-point Times New Roman or Arial font.

Turning in the thesis prospectus:

The student should work in close consultation with her/his research advisor to write the thesis/research project prospectus. The research advisor must approve of drafts of the prospectus given to other committee members.

All three committee members are required to approve the thesis/research project prospectus. **Students must contact committee members at least one month prior to turning in the prospectus to the department.** This allows all individuals to schedule time to read the prospectus, give the student comments, allow the student to address comments, and the committee members to re-review.

Download and complete the cover page that contains the thesis title, student's name, the names of the committee members, and the date.

- The prospectus is submitted your second semester prior to submitting your Advancement to Candidacy (ATC) and Culminating Experience (which are submitted your third semester).
- The deadline for fall semesters is generally the first week of October, and for spring the first week of March. Students must submit their prospectus (two) semesters before they plan to graduate.
- The prospectus is the template for the student's thesis, where information is added as work is completed.

Prospectus Format:

Below are general guidelines to follow, which can be modified in consultation with the advisor. It is advisable to use the following headers:

Name, Title, and Abstract page

Please state the **date**, your **name**, and the **title** of your thesis and include an **abstract**. The abstract should be less than 500 words.

Research Plan (that includes figures)

Background and Significance: This section should include key findings that lead up to your work. Please avoid an exhaustive review of the literature and instead focus on important papers in your field that put your work into context. The section should funnel information from broad to narrow. It should define information that sets up an important problem or unknown that you will address.

Impact Statement: This should be a short section that succinctly states what impact your studies will have on your field and the public. State what will be possible as a result of your studies that is not possible without them.

Hypothesis: A hypothesis is a statement about what will be learned about your topic of study based on your work. Please avoid posing questions or stating your expected results. Instead craft this based *on what specific knowledge will be gained* about your topic of study.

Aims: Consider experimental aims in the context of how much time you plan to be in your degree program. You can also instead consider posing questions to be addressed. Typically, 3 aims are reasonable. The aims should tie back to addressing your overall hypothesis. You can also pose a "working hypothesis" to set up each aim.

Research Design (each aim can be divided into sub-questions)

Specific Aim 1:

Each aim may be sub-divided into questions that address a part of the aim. Sometimes a short *rationale* may be introduced here to help justify the aim further.

Question 1

Explain the *experimental design.* This should be a summary that provides enough information for a committee member not in one's field to understand the proposedwork. It should NOT be a detailed protocol. It is important to provide a description of relevant controls and reagents.

Explain the *expected outcome or result*. Explain potential pitfalls an alternative strategies to deal with such problems. If the work has been completed, preliminary results should be described.

State a short *conclusion*. How does this result answer the question?

When in the overall *timeline* of your project will this section becompleted?

Question 2 (if needed)

Same format as Question 1.

Summary/Conclusion of the Aim

How does the expected results and the conclusions from each set of experiments address the aim and the hypothesis? How is the knowledge gap filled? Why is it significant?

Specific Aim 2 (if needed)

• Same format as aim 1.

Conclusions

Bring the reader back to the hypothesis? How will the completion of these studies move the field forward (include references)? What are the next steps?

References (not included in page count)

An Example Thesis Prospectus Outline (use this to help you plan/organize your written thesis prospectus)

Title: Student: PI:

Abstract: Key words:

Background/ Significance: (include figures if appropriate) **Impact Statement**

HYPOTHESIS:

Specific Aims: Aim 1: Aim 2: Aim 3:

Experimental Design

Aim 1: Rationale: Experiments: Expected Outcomes: (include actual data) Potential Problems:

Aim 2: Rationale: Experiments: Expected Outcomes: (include actual data) Potential Problems:

Aim 3: Rationale: Experiments: Expected Outcomes: (include actual data) Potential Problems:

Conclusion/Significance: Future Directions Literature Cited

Prospectus Rubric

The columns describe the product expected from four levels (beginning, developing, and intermediate, advanced) during Prospectus development. This rubric should be used to help you develop and assess your own writing. It can also be used by you and your advisor so that he/she can give you feedback about how your prospectus is developing.

	Beginning	Developing	Intermediate	Advanced
Significance	Lacking in arguments	Research field is	Research field	Research topic significance is
and	for significance.	introduced but significance	significance is evident.	introduced in a creative or striking
Background	Impact of work is not	is not compelling. Lacking	Research may have low	way. Clear and compelling rationale.
	addressed or vague.	in rationale. Impact is too	impact or incremental	Impact of proposed research directly
	Terms not defined.	long-term or not directly	knowledge gained.	addressed. Innovative aspects of
	Information flow is	tied to research. Terms not	Lacking in compelling	proposal are described clearly. The
	disconnected.	defined consistently.	rationale. The flow of	flow of information is from Broad to
	Paragraphs are not	Information does not	information has some	Specific. Terms are defined as they
	well organized. Only	consistently flow from	gaps. Topic sentences	are introduced. Paragraphs link
	1 or 2 papers	broad to narrow.	lack clarity. "Knowns"	logically and are introduced with
	discussed.	Paragraphs lack strong	are vague. Lacking depth	strong topic sentences. "Knowns"
		topic sentences. Few	of knowledge of either	are concrete. A depth of knowledge
		papers cited or discussed	papers in field or work	of displayed with cited papers
		with little depth.	done in author's lab.	within field and by the author or
				authors lab.
Impact	Impact statement is	The impact is weak or does	Impact statement is	The impact the work will have is
Statement	missing or not	not connect directly from	mostly well	clearly identified. It follows logically
	supported by	background information.	substantiated by	from background and ties closely to
	background		background. May be	the results that will be obtained
	information.		wordy or not directly	
			relevant to studies.	
Hypothesis and	Hypothesis is stated	Hypothesis only partially	Aims don't consistently	Hypothesis is clearly stated. All
Aims	as a question or as	addresses problem.	relate to hypothesis.	components in hypothesis are
	expected results.	Difficult to tell how aims	Aims relate to hypothesis	described in the background section.
	Hypothesis does not	address hypothesis. Aims	but are not compelling or	Hypothesis addresses problem. Aims
	address problem.	don't consistently relate to	will only provide	listed are concrete. Aims address
	Aims do not directly	hypothesis.	incremental advances in	hypothesis.
	address hypothesis.		knowledge.	

	Beginning	Developing	Intermediate	Advanced
Research	Lacking in rationale for	Weak rationale for why	Rationale for methods is	Strong rationale for the methods
Design	methodology chosen. The	methodology is	not consistently strong.	chosen is given. A clear
	description either is too	appropriate. The	Methodology description	description of the steps the
	detailed (like a protocol)	description of	has good level of detail but	proposer will use to conduct the
	or lack description (not	methodology lacks	may be missing some	experiment. Controls conditions
	possible to tell what will	concrete information to	information to make it	are discussed. Experimental
	be done). Controls are not	understand what will be	clear what steps will be	outcomes are included. How
	discussed. Experimental	done or is not presented	undertaken. Experimental	results address the aim or
	outcomes are not well	in a step-wise sequence.	outcomes may not be	questions posed are clear. A
	thought out or missing.	Experimental outcomes	consistently presented.	timeline is given and is
	May be missing strong	are vague. Conclusions are	Conclusions are not	appropriate.
	conclusions.	not consistently provided.	directly related to results	
			described.	
Overall	Potential findings are	Potential findings are	Potential findings are	Potential findings are discussed
Conclusions	discussed in a cursory or	discussed but lack depth.	discussed and relevant	in relation to other papers in the
	vague fashion. No	Information doesn't flow	citations are included but	field (relevant citations are
	discussion of similar	from narrow to broad.	may lack depth or miss	included). Information flows from
	work in the field. Lacking	Little works is cited.	important information.	narrow to broad. Significance of
	citations. Lacking tie back		Flow of information may	work is addressed.
	to significance.		be inconsistent. Tie to	
			significance may not be	
		-	strong.	
Format and	Overly long or short.	Some grammar issues.	Organization is good but	Proposal is visually appealing and
English	Instructions not followed.	Paragraphs may have	not consistently evident.	well organized. Paragraphs have
Proficiency	Numerous grammatical	some structure but issues	Paragraphs may still lack	strong topic sentences that are
	and writing issues.	with topic sentences or	clear topic sentences or	supported by sentences within.
	Paragraphs lack structure	logical flow may be	logical flow.	Information flows logically
	and do not flow logically.	evident. Information flow		between and within paragraphs.
		is inconsistent.		

Thesis Prospectus - Signature Sheet

Attach this coversheet, signed and completed, to your Prospectus

Student Name: John Smith Committee Signatures, attesting that the committee members have read and approved the Prospectus. Dr. Tom Parker Committee Chair (print name) (signature) & (date) Dr. Andy Zink Committee Member (print name) (signature) & (date) Dr. Karen Crow Committee Member (print name) (signature) & (date) Title: What happened to the last dodo bird Keywords: On the line below write (print clearly) up to five keywords (single words please) that do not appear in the thesis title but that relate to your research. We will use these keywords as a search tool in the biology graduate student database.

bird, dodo, species
Advancement to Candidacy (ATC) Forms and Culminating Experience (CE) Forms found at here: <u>https://grad.sfsu.edu/content/grad-forms</u>



Business Administration (MBA) Post Spring 2019

Advancement to Candidacy (ATC) Forms

- Email me your ATC form review. (gmt@sfsu.edu)
- Deadline October 1 (for me to review)
- Deadline November 1 to submit to Graduate Division (for approval)
- ATC found at the division of graduate studies website: <u>https://grad.sfsu.edu/content/advancement-to-candidacy</u>
- CMB, EECB, Marine, Microbiology , and Physiology should select: <u>bio-prior-to-2020–2021</u>
- PSM students have their own ATC

Requirements for ATC:

- Required 4-units of Seminar (860-865), fill in the topic of the class; abbreviate.
- No more than 4-units of Colloquium courses toward towards your total of 30
- Only 6 units of Research and you must list them all in the Research section
- List the semester you completed your Prospectus.
- Cannot use Bio 881 (1-unit) lab towards 30 units (Requirement Prior to Fall 2020)
- Add up your units and make sure you have (30-units)

Culminating Experience (CE) Form

- Email me your CE for review. (gmt@sfsu.edu)
- Deadline October 1 (for me to review)
- Deadline November 1 to submit to Graduate Division (for approval)
- CE found at the division of graduate studies website: <u>https://grad.sfsu.edu/content/grad-forms</u>
- Make sure to select the correct CE: Bio 895 for creative research project or Bio 898 for thesis.

Requirements for CE:

- Work with your PI/committee members to come up with a project timeline
- List all the names of your committee members (I will help you get the signatures)
- CV for any non-Biology committee members
- Human or Animal Protocols (if required) Review Here: <u>https://research.sfsu.edu/protocol</u>

Obtaining the Signatures:

• Send me all your documents; I will obtain signatures via DocuSign.

ATC EXAMPLE – POST 2020

FORM	cisco State University MUST BE TYPED	Opdated July 202 ADVA		IENT TO		raduate Studies	ADM-250	(415)	338-223
Master	of Science			Major	Biology	1			
Conce	ntration or Emphasis (if a	pplicable) Integrativ	ve Biolog	y (Post Fall	2020)				
Student	: Select the correct Univers	ity Bulletin year you w	ere admit	ted to the pro	gram:	2020 - 2021			-
Name:	Maria Pera					Student ID:	987-654-321		
Address	500 Maple Drive					Phono(s):	415 555 8080		
nuuress.	Soo Francisco					Filone(s).			ada a
City	San Francisco	State: U	A _ Z	(ip Code: 941	23	E-mail:	mariapera@n	hail.stsu.e	du
ALL KI	EQUIREMENTS MUST BE COMPLE CO	NTINUOUS ENROLLMENT I	S REQUIRED	AFTER ENROLLM	ENT IN THE CU	ILMINATING EXPERIENCE	ON TO YOUR GRA	DUATEPH	OGRAM
<u> </u>	Student: Fill out the fo	llowing information co	ompletely	(including the	semester a	nd year each course	was or will be t	taken).	
Course Number	Course T	Itle	Units Required	Units (to be) completed	Semester & Year	Institution (no (transfer unit	ot SFSU) s only)*	Grade	In Progre Or To Do
equired	Courses		13						
OL 700	Introduction to Researc	h Skills		3	F2020			Α	
OL 862	Advances in Ecology an	d Systematic Biolog	у	2	F2020			Α	
IOL 870	Biology Colloquium			2	52021			Α	
OL 897	Research			2	S2021			Α	
IO 897	Research			2	S2021			Α	
IO 897	Research			1	F2021				IP
IO 897	Research			1	S2022				to do
lective u y stude	units requirements sha nt's committee	ll be determined	13						
IO 883	Seminar: Marine Biology	1		2	F2020			Α	
IO 750	Science Teaching for Sci	entists		2	52021			Α	
IO 862	Advances in Ecology (w	rite in topic)		2	F2021				IP
SIO 582	Biological Oceanograph	у		4	F2021				IP
IO 532	Restoration Ecology			3	F2021				IP
ne of the	following Culminating E	operience Options	4						
OL 895	Research Project and O	ral Defense OR		4	52022				To do
OL 898	Master's Thesis and Ora	Derense	20						
	Total U	*NOTE: Fee	30 min	30	t fan Candur	to Decomo Transfer	Unit Fundantia	a any st b	in the second se
Additiona Thesis Repor	a Degree Requirements: Receipt AND Report t of Completion for BIOL 895	of Completion for Oral D AND Report of C	efense C	**Maxim DR	um of 6 uni	its of BIOL 897. Max	cimum of 2 un	its of Bl	DL 881.
GRADUATE	E MAJOR ADVISER: Please chec	k off below the manner b	by which th	is student has o	will have sat	isfied Second Level wri	tten English	OFK.	
proficiency	r in your graduate program, i.e	ability to write in a scho. SEC	lárly mann OND LEVI	er in the major fi EL TO BE CON	eld. IPLETED BY	Thesis Prospec	ctus - Fall 202	1	mot)
(A	Report or Completion must	ve nied with the Divisio		Thesis Prospectu	indicate the S	second Lever wriden	English proncie	arcy was	met.j
ADUATE	ADVISER (Required):	Andy Zink		-					
		Type/Print Last 1	Name			Signature		Date	
ADUATE C	COORDINATOR (Required):	Dr. Diana C	hu						
	-	Type/Print Last 1	Name			Signature		Date	
Appr	roved 🗆 🛛 No	t approved 🛛							

Dean of the Graduate Division or Designee Date
Note: Upon approval of the ATC, read graduate Academic Policies and Procedures section in the Bulletin regarding conditions for maintaining its validity



Division of Graduate Studies 1600 Holloway Avenue, ADM 250 San Francisco, CA 94132 Phone: (415) 338-2234 Web: grad.sfsu.edu

Advancement to Candidacy (ATC) Form

Instructions for Completing ATC Form Form Begins on Page 2

FORM MUST BE TYPED

This form must be typed.

After completion of 18 units and prior to the semester of enrolling in your Culminating Experience course you must submit your ATC form.

The ATC form acts as your contract between you, your department, and the university. The ATC lists the specific requirements you must complete before your degree can be awarded. Once the ATC is approved, you are advanced to candidacy and classified standing. The ATC is a permanent record of your completed and planned course work as well as other requirements necessary for you to complete your degree. The ATC form must be approved by Graduate Studies before enrolling in and beginning research for the culminating experience course.

Type and print out the form and obtain the required signatures (graduate advisor and department chair or graduate coordinator). Handwritten forms will not be accepted. Completed forms should be submitted to GradStop, ADM 250.

PLEASE NOTE: in order save your personal information on the following PDF forms, you will need to:

- Install latest version of Adobe Acrobat Reader on your computer. Click here for Free Adobe Acrobat Reader: http://www.adobe.com/products/acrobat/readstep2.html.
- 2. Save the PDF form to your computer desktop prior to entering your personal information.

THE CALIFORNIA STATE UNIVERSITY: Bakersfield, Channel Islands, Chico, Dominguez Hills, East Bay, Fresno, Fullerton, Humboldt, Long Beach, Los Angeles, Maritime Academy, Monterey Bay, Northridge, Pomona, Sacramento, San Bernardino, San Diego, San Francisco, San Jose, San Luis Obispo, San Marcos, Sonoma, Stanislaus

San Francisco State University (Updated July 2020) Graduate Studies ADM-250 (415) 338-2234 FORM MUST BE TYPED ADVANCEMENT TO CANDIDACY (415) 338-2234

Master o	of <u>Science</u>		Major	Biology (Price	or to 2020 - 2	2021)	
Concentration or Emphasis (if applicable) Ecology Evolution & Conservation Biology							
Student:	Student: Select the correct University Bulletin year you were admitted to the program: 2017 - 2018						
Name:	John Smith				Student ID:	987-654-321	
Address:	500 Chestnut Street				Phone(s):	415-555-7878	
City	San Francisco	State: CA Zi	n Code: 941	23	E-mail:	ismith@mail.sfsu.edu	

ALL REQUIREMENTS MUST BE COMPLETED ACCORDING TO PROGRAM GUIDELINES OR WITHIN 7 YEARS FROM THE TERM OF ADMISSION TO YOUR GRADUATE PROGRAM CONTINUOUS ENROLLMENT IS REQUIRED AFTER ENROLLMENT IN THE CULMINATING EXPERIENCE

	Student: Fill out the following information c	ompletely	(including the	semester a	nd year each course was or will be t	taken).	
Course Number	Course Title	Units Required	Units (to be) completed	Semester & Year	Institution (not SFSU) (transfer units only)*	Grade	In Progress Or To Do
Courses	on advisement (list below):	20-23					
BIO 514	Plant Taxonomy		5	F 2017		Α	
BIO 505	Comp Anatomy of Vascular Plants		4	F 2017		Α	
BIO 872	Colloquium		2	S 2018		Α	
BIO 782	Developmental Biology		3	S 2018		Α	
BIO 862	Adv Eco Systematic Bio (Topic)		2	F 2019			IP
BIO 716	Skills in Science Writing		3	F 2019			IP
GEO896	Directed Reading Surface Water Hydrology		3	S 2020			to do
BIO 862	Adv Eco Systematic Bio (Topic)		3	S 2020			
3-6 Uni	ts of BIOL 897 (Research):	3-6					
BIO 897	Research		2	S 2017		Α	
BIO 897	Research		2	F 2018		Α	
BIO 897	Research		1	F2019			IP
BIO 897	Research		1	F2020			to do
One of th	e following Culminating Experience Options	3-4					
BIOL 895	Field Research Project and Oral Defense OR		4	S2020			to do
BIOL 898	Master's Thesis and Oral Defense						
	Total Units	30 min	35				

Additional Degree Requirements: *NOTE: For transfer work, a Request for Graduate Program Transfer Unit Evaluation must be submitted.

Thesis Receipt AND Report of Completion for Oral Defense OR

Report of Completion for BIOL 895 AND Report of Completion for Oral Defense

Only 30% of units listed on the Advancement to Candidacy may be upper division undergraduate coursework.

proficiency in y	our graduate program	, i.e. ability to write in a scholar SECON	which this student has of will have satisfie ly manner in the major field. ND LEVEL TO BE COMPLETED BY: _	Thesis Prospectus - Fall 2019	
(A "Rej	port of Completion" m	ust be filed with the Division o	of Graduate Studies to indicate the Sec Thesis Prospectus	cond Level Written English proficiency	/ was met.)
GRADUATE AD	ISER (Required):	Andy Zink	Andy Zi	rk	
		Type/Print Last Nar	ne de s	Signature	Date
GRADUATE COO	RDINATOR (Required):	Dr. Diana Chu	u		
		Type/Print Last Nar	ne S	Signature	Date
Approve	ed 🗖	Not approved 🗆 🛛			
			Dean of the Graduate Division or De	signee	Date

Note: Upon approval of the ATC, read graduate Academic Policies and Procedures section in the Bulletin regarding conditions for maintaining its validity.

Biology 895 Project Report Guidelines

The Project Report for Biology 895 is used as the Culminating Experience for the Biology Master's Program. The goal of the Project Report is to present a written communication that conveys the relevance of the research question, the goals of the research, the data and findings, and the conclusions of the work.

Goals: In the Project Report, the student will demonstrate their capabilities in the following learning outcomes:

- 1) Analyze research articles to identify those in their field of study most relevant to their research project.
- 2) Evaluate data and interpret results to draw appropriate conclusions.
- 3) Present data in effective and understandable written or visual formats appropriate to the student's field of study.
- 4) Draw valid conclusions from data collected during research experiences and field projects.
- 5) Convey these abilities in writing in a format appropriate to the student's field of study.

It is important to note that **the Project Report will not be made publicly available**. The Project Report is approved by the Thesis Committee and Department but NOT archived and made public by the University Library. The abstract of the Research Report is submitted to Graduate Studies.

Format:

The format of the Project Report should be determined in consultation with the thesis advisor, committee members and student. The Project Report format should be chosen to maximize the use of the written materials for further professional activities, including submission of the work for publication.

The following are the minimum required sections that must be included in every Project Report. The format can be modified in consultation with the thesis advisor and committee to align with formats of scientific journals as necessary. The Research Report must be written in prose (no outlines will be accepted).

Title Page

Please state your **name**, the **title** of your thesis, your **thesis advisor**, and the date.

Abstract

The abstract should be less than 500 words.

Summary of Research

(variable length depending on you research project. A minimum of 10 single-spaced pages and may include figures)

<u>Significance and Background</u>: This section should include key findings that lead up to your work. Please avoid an exhaustive review of the literature and instead focus on important papers in your field that put your work into context. The section should funnel information from broad to narrow. It should also define information that sets up an important problem you will address and your hypothesis.

Hypothesis or Goals Statement:

A hypothesis is a statement about what will learned about your topic of study based on your work. Please avoid posing questions or stating your expected results. Instead craft this based on what specific knowledge you will learn about your topic of study.

A goal is a specific outcome from the proposed work. Please concisely state what will be produced and how this represents a unique contribution to the field.

<u>Methods</u>

A description of the methodology must be included in a fashion similar to that used in research articles in the student's field of study. It should be understandable to committee members and useful to students that are in a similar field of study that would like to replicate the experiments done.

<u>Results</u>

This main section of the Research Report should convey the data collection and analysis of the experimental work conducted by the student. It should be presented in a fashion similar to that used in research articles in the student's field of study.

Figures and Tables

All figures and tables must be accompanied by a clear and concise legend that describes each aspect of figure or table. The figures, tables, and legends may be impended within the text of the results or can be shown separately after the main text. Each figure and table must be referred to in the main text and should be numbered in order.

<u>Conclusions</u>

Please describe how the results address the original hypothesis or stated goal. It is important to convey the *significance* of the work in context to the field of study. How did the findings impact the field of study? What new was learned that was not known before?

References (not included in page count)

The format of the references can be decided by the student in consultation with the committee. Typically, the references should follow the format of those in journals typically used in the student's field of study. All references listed should be cited within the text, figures, tables, and legends.

The Project Report must be written using standard 8.5" x 11" page size, 12-point, Times New Roman font OR 11-point Arial font, 1" margins on all sides, and must be single spaced or greater. References, figure legends, and footnotes may be a smaller font, no less than 10point Times New Roman or Arial font.

Evaluation

The Project Report must be approved by the Thesis advisor in consultation with the Thesis Committee.

The Thesis Committee requires a <u>**minimum of 3 weeks</u></u> to read and evaluate the Project Report before providing feedback to the student.</u>**

The Thesis Committee members may provide written or verbal feedback about changes that must be implemented before approval. The student can work in consultation with the thesis committee, the thesis advisor, and the student to determine what changes should be made. The thesis advisor will approve the Project Report after consultation with the committee.

Culminating Experience (CE) Forms

found at here: https://grad.sfsu.edu/content/grad-forms



Choose a Culminating Experience Form from the list below:

- 890: Culminating Experience Seminar (MBA only)
- 890: Culminating Experience Seminar (MSA only)
- 890: Culminating Experience Seminar
- 892: Supervised Field Internship
- 893: Written Creative Work
- 894: Creative Work Project
- 895: Field Study or Applied Research
- 896 EXM Option: Written or Oral Examinations

• 898: Thesis

998: Dissertation

Culminating Experience (CE) Form

- Email me your CE for review. (gmt@sfsu.edu)
- Deadline October 1 (for me to review)
- Deadline November 1 to submit to Graduate Division (for approval)
- CE found at the division of graduate studies website: <u>https://grad.sfsu.edu/content/grad-forms</u>
- Make sure to select the correct CE: Bio 895 for creative research project or Bio 898 for thesis.

Requirements for CE:

- Work with your PI/committee members to come up with a project timeline
- CV for any non-Biology committee members
- Human or Animal Protocols (if required) Review Here: <u>https://research.sfsu.edu/protocol</u>

Obtaining the Signatures:

• Send me all your documents; I will obtain signatures via DocuSign.



Culminating Experience Procedures

Instructions for Completing Proposal for Culminating Experience (PCE)

Forms on PAGE 3 and 4 must be typed and the original document with original signatures must be submitted to the Division of Graduate Studies.

The culminating experience must be met by the satisfactory completion of a thesis, special project, comprehensive examination, and/or an oral defense of the work (courses: 890, 892,893,894,895, 896EXM, 898,998).

Steps to Completion:

Submit your Proposal for Culminating Experience (PCE) to GradStop (ADM 250) by the deadline a semester prior to registering in your culminating experience course.

Your PCE must be approved by your Culminating Experience Committee and the Department Chair or Graduate Coordinator for your program.

Selection of Culminating Experience Committee:

The committee must consist of a minimum of two members. Some programs require a third member. The chair and the second member of your committee must hold tenured/tenure-track faculty appointments in your major department.

In circumstances where special expertise is available in another department, the graduate dean may authorize a designated tenured/tenure-track faculty member from a related department to serve as second reader.

The third member of a committee may be a lecturer or from outside the major department or university. Lectures or readers outside the university must have a current curriculum vitae on file in the Division of Graduate Studies.

With special permission from the Dean of Graduate Studies, some long-term lecturers with terminal degrees in their field or with special expertise may serve as the second reviewer provided their curriculum vitae is on file in the Division of Graduate Studies.

To officially change the composition of your committee, you must submit a Petition for Committee Revision to GradStop (ADM 250).

Research Involving Humans, Vertebrate Animals or Biological Specimens:

If your project includes research with humans, vertebrate animals, or biological specimens (e.g., tissues, stem cells/cell lines, blood), additional documentation is required. Refer to Section 8 of the PCE form.

For more information, visit the website of the Office of Research and Sponsored Programs - Human and Animal Protections (ORSP-HAP) at <u>http://research.sfsu.edu/protocol/</u>.

IMPORTANT: You may NOT begin your research until you obtain an official notice of Approval, Exception or Exemption from ORSP-HAP

Registration and Grading for Culminating Experience Courses:

Registration in a Culminating Experience course will not be permitted until your Advancement to Candidacy (ATC) and Proposal for Culminating Experience (PCE) are approved by the Division of Graduate Studies. You must have a 3.0 GPA in all post-baccalaureate course work completed.

Important Notes:

If you do not complete the course by the end of the semester of registration and receive a grade of RP (Report in Progress), do not register for the course again. When the project is completed, be sure that your committee chair files a grade change to CR (Credit) with the Registrar's Office.

A Report of Completion must be filed for internships, field studies, or creative work projects. A Thesis Receipt signed by Graduate Studies is required for thesis or written creative work.

Students must adhere to the Continuous Enrollment Policy as stated in the bulletin. After the semester of enrollment in the Culminating Experience and the subsequent (grace period) semester, all graduate students are required to maintain continuous enrollment through the College of Extended Learning (CEL) or a degree-related course in their field while completing the culminating experience.

Form begins on Page 3

PLEASE NOTE: in order save your personal information on the following PDF forms, you will need to:

- 1. Install latest version of Adobe Acrobat Reader on your computer. Click here for Free Adobe Acrobat Reader<u>http://www.adobe.com/products/acrobat/readstep2.html</u>.
- 2. Save the PDF form to your computer desktop prior to entering your personal information.

PROPOSAL FOR CULMINATING EXPERIENCE

895: FIELD STUDY OR APPLIED RESEARCH

REPORT OF COMPLETION REQUIRED

Complete, print and file this form with the Division of Graduate Studies in accordance with guidelines published in the University *Bulletin*. NO HANDWRITTEN FORMS WILL BE ACCEPTED

1. Official Degree Title as listed in the Univers	ity Bulletin:
Master of	Major
Concentration or emphasis (if applicable)	
2. Name	Student ID
Address	Phone
City/State/Zip	Email
3. Check here if this is a REVISED propo	sal (withdrawing previous proposal)
4. I plan to register for the 895 corrections in	(enter term and year):or 🛛 I previously registered for the 895
5. Title (Limit 12 words): (Report any the char	ge to the Division of Graduate Studies prior to filing completed work.)
6. Brief statement of project and research det	Non (mus / tr in space allotted):
7. Projected timeline for completion of culmin	ating experience

Complete in detail with your advisor. Indicate dates when sections/specific work will be due to faculty for review.

PLAN FOR COMPLETION OF CULMINATING EXPERIENCE					
LIST COMPONENTS OR SECTIONS FOR COMPLETION	DATES TO BE SUBMITTED TO FACULTY FOR REVIEW				
I PLAN TO COMPLETE MY DEGREE IN: FALL SPRING SUMMER YEAR					
I have reviewed the above with my committee members and agree to the terms of the projected timeline					
STUDENT SIGNATURE DATE					

COMPLETE PAGE 2 AND OBTAIN ALL REQUIRED SIGNATURES

8.	if yo You	DUR PROJECT INVOLVES RESEARCH WITH HUMANS, ANIMALS OR BIOLOGICAL SPECIMENS (cells, tissues, etc.), MUST PROVIDE ADDITIONAL DOCUMENTATION:
	Dep unit	pending on the nature of your project, SF State may require you to submit information to the Human and Animal Protections (HAP) t for project registration or approval . Contact HAP at <u>protocol@sfsu.edu</u> or 415-338-1093.
	1.	If you have received confirmation of approval or determination through HAP: <u>Attach</u> the official approval or determination notice and select one of the following:
		My protocol has been approved by the IRB or IACUC and I have attached the approval notice.
		My project has been determined to be Exempt or Excepted by HAP and I have attached the notice of determination.
	2.	If your project has been submitted to HAP and is under review, provide the date submitted to HAP:, and indicate the submission type:

- 3. If your research is covered under someone else's protocol, you need to register with HAP, and indicate one of the following:
 - □ My project is covered under an SFSU faculty member's protocol. Protocol #: ______ (if already approved).
 - □ My project is covered under an approved protocol at another institution.
- 4. If you are UNSURE if your proceeding considered <u>human subjects research</u>, submit an Application for Determination of Exemption to HAP: <u>https://research.sfsu.edu/_onter/application-determination-exemption</u>
- 5. If you are UNSURE if your project is considered animal research, contact HAP at protocol@sfsu.edu or 415-338-1093.
- 6. If you are conducting research using biochical to cimens (e.g., tissues, cells, etc.), you must register the work with HAP and attach their official notice of exception or approval

IMPORTANT: DO NOT BEGIN YOUR RESEARCH WITH, YOU RECEIVE NOTICE OF APPROVAL, EXEMPTION OR EXCEPTION

REQUIRED NAMES AND ORIGINAL SIGNATURES

9. Supervising committee: must include a minimum of two TENURED or TENURE TRACE factory memory from the student's major department

FOR COMMITTEE CHAIR:		
I will be available to work with students (1) during winter break	□YES □NO	(2) during the summer months \Box YES \Box NO

Committee Chair:

SIGNATURE TYPE/PRINT NAME, ACADEMIC RANK AND DEPT.

EMAIL (REQUIRED)

Other committee member(s):

2nd

SIGNATURE

TYPE/PRINT NAME, ACADEMIC RANK AND DEPT.

3rd

SIGNATURE

TYPE/PRINT NAME, ACADEMIC RANK AND DEPT.

10. Department chair/graduate coordinator: I have reviewed the above proposal including the composition of the supervising committee and find it acceptable for meeting the culminating experience requirement for the master's degree in the major indicated.

SIGNATURE	TYPE/ PRINT NAME AND TITLE	DATE
	FOR OFFICE USE ONLY	
ORSP-HAP determination: Approved protoco	I#Exempt Date	Excepted ———— Date
Accepted by Division of Graduate Studies	[Date

Biology 898 Thesis Guidelines

The Thesis for Biology 898 is used as the Culminating Experience for the Biology Master's Program. The goal of the Thesis is to present a written communication that conveys the relevance of the research question, the goals of the research, the data and findings, and the conclusions of the work. The Thesis is considered a published work and **must meet the standards of the University before it is approved.**

Information about the formatting and submission of the Thesis can be found at this site:

http://grad.sfsu.edu/content/thesis-dissertation-guidelines

Goals: In the Thesis, the student will demonstrate their capabilities in the following learning outcomes:

- 1) Analyze research articles to identify those in their field of study most relevant to their research project.
- 2) Evaluate data and interpret results to draw appropriate conclusions.
- 3) Present data in effective and understandable written or visual formats appropriate to the student's field of study.
- 4) Draw valid conclusions from data collected during research experiences and field projects.
- 5) Convey these abilities in writing in a format appropriate to the student's field of study.

It is important to note that your thesis must be approved by the Thesis committee and Department. It is important to note that the approved Thesis is made accessible to the public through the SFSU University Library.

Format:

The format of the Thesis should follow all of the guidelines required by the University: http://grad.sfsu.edu/sites/default/files/forms/thesis-dissertation-checklist.pdf

Preliminary Pages

The University requires standard pages in every thesis. They can be found here:

Thesis Text Pages:

After including the mandatory Preliminary Pages, the following are the suggested sections

that are typically included in the Thesis. The format can be modified in consultation with the thesis advisor and committee to adhere to standards of the field of study but MUST adhere to the University guidelines for the Thesis. The Thesis must be written in prose (no outlines will be accepted).

Summary of Research

(variable length depending on you research project. A minimum of 10 single-spaced pages and may include figures)

<u>Significance and Background</u>: This section should include key findings that lead up to your work. Please avoid an exhaustive review of the literature and instead focus on important papers in your field that put your work into context. The section should funnel information from broad to narrow. It should also define information that sets up an important problem you will address and your hypothesis.

Hypothesis or Goals Statement:

A hypothesis is a statement about what will learned about your topic of study based on your work. Please avoid posing questions or stating your expected results. Instead craft this based on what specific knowledge you will learn about your topic of study.

A goal is a specific outcome from the proposed work. Please concisely state what will be produced and how this represents a unique contribution to the field.

<u>Methods</u>

A description of the methodology must be included in a fashion similar to that used in research articles in the student's field of study. It should be understandable to committee members and useful to students that are in a similar field of study that would like to replicate the experiments done.

<u>Results</u>

This main section of the Research Report should convey the data collection and analysis of the experimental work conducted by the student. It should be presented in a fashion similar to that used in research articles in the student's field of study.

Figures and Tables

All figures and tables must be accompanied by a clear and concise legend that describes each aspect of figure or table. The figures, tables, and legends may be impended within the text of the results or can be shown separately after the main text. Each figure and table must be referred to in the main text and should be numbered in order.

Conclusions

Please describe how the results address the original hypothesis or stated goal. It is important to convey the *significance* of the work in context to the field of study. How did the findings impact the field of study? What new was learned that was not known before?

References

The format of the references should follow University guidelines. All references listed should be cited within the text, figures, tables, and legends.

Evaluation

The Thesis must be approved by the Thesis advisor in consultation with the Thesis Committee. The Thesis must also meet Graduate Division guidelines for formatting.

The Thesis Committee requires a <u>minimum of 3 weeks</u> to read and evaluate the Thesis before providing feedback to the student.

The Thesis Committee members may provide written or verbal feedback about changes that must be implemented before approval. The student can work in consultation with the thesis committee, the thesis advisor, and the student to determine what changes should be made. The thesis advisor will approve the Thesis after consultation with the committee.



Culminating Experience Procedures

Instructions for Completing Proposal for Culminating Experience (PCE)

Forms on PAGE 3 and 4 must be typed and the original document with original signatures must be submitted to the Division of Graduate Studies.

The culminating experience must be met by the satisfactory completion of a thesis, special project, comprehensive examination, and/or an oral defense of the work (courses: 890, 892,893,894,895, 896EXM, 898,998).

Steps to Completion:

Submit your Proposal for Culminating Experience (PCE) to GradStop (ADM 250) by the deadline a semester prior to registering in your culminating experience course.

Your PCE must be approved by your Culminating Experience Committee and the Department Chair or Graduate Coordinator for your program.

Selection of Culminating Experience Committee:

The committee must consist of a minimum of two members. Some programs require a third member. The chair and the second member of your committee must hold tenured/tenure-track faculty appointments in your major department.

In circumstances where special expertise is available in another department, the graduate dean may authorize a designated tenured/tenure-track faculty member from a related department to serve as second reader.

The third member of a committee may be a lecturer or from outside the major department or university. Lectures or readers outside the university must have a current curriculum vitae on file in the Division of Graduate Studies.

With special permission from the Dean of Graduate Studies, some long-term lecturers with terminal degrees in their field or with special expertise may serve as the second reviewer provided their curriculum vitae is on file in the Division of Graduate Studies.

To officially change the composition of your committee, you must submit a Petition for Committee Revision to GradStop (ADM 250).

Research Involving Humans, Vertebrate Animals or Biological Specimens:

If your project includes research with humans, vertebrate animals, or biological specimens (e.g., tissues, stem cells/cell lines, blood), additional documentation is required. Refer to Section 8 of the PCE form.

For more information, visit the website of the Office of Research and Sponsored Programs - Human and Animal Protections (ORSP-HAP) at <u>http://research.sfsu.edu/protocol/</u>.

IMPORTANT: You may NOT begin your research until you obtain an official notice of Approval, Exception or Exemption from ORSP-HAP

Registration and Grading for Culminating Experience Courses:

Registration in a Culminating Experience course will not be permitted until your Advancement to Candidacy (ATC) and Proposal for Culminating Experience (PCE) are approved by the Division of Graduate Studies. You must have a 3.0 GPA in all post-baccalaureate course work completed.

Important Notes:

If you do not complete the course by the end of the semester of registration you will receive a grade of RP (Report in Progress). Do not register for the course again. When the project is completed, be sure that your committee chair files a grade change to CR (Credit) with the Registrar's Office.

A Report of Completion must be filed for internships, field studies, or creative work projects. A Thesis Receipt signed by Graduate Studies is required for thesis or written creative work.

Students admitted or re-admitted to a Graduate Program in Fall 2008 or later must adhere to the Continuous Enrollment Policy as stated in the bulletin. After the semester of enrollment in the Culminating Experience and the subsequent (grace period) semester, all graduate students are required to maintain continuous enrollment through the College of Extended Learning (CEL) until the degree is earned.

Form begins on Page 3

PLEASE NOTE: in order save your personal information on the following PDF forms, you will need to:

- 1. Install latest version of Adobe Acrobat Reader on your computer. Click here for Free Adobe Acrobat Reader<u>http://www.adobe.com/products/acrobat/readstep2.html</u>.
- 2. Save the PDF form to your computer desktop prior to entering your personal information.

PROPOSAL FOR CULMINATING EXPERIENCE

898: THESIS

THESIS RECEIPT REQUIRED UPON COMPLETION

Complete, print and file this form with the Division of Graduate Studies in accordance with guidelines published in the University *Bulletin*. NO HANDWRITTEN FORMS WILL BE ACCEPTED

1. Official Degree Title as listed in the University Bulletin:	
Master of Major	
Concentration or emphasis (if applicable)	
2. Name	Student ID
Address	Phone
City/State/Zip	Email
3. Check here if this is a REVISED proposal (withdrawing previous proposal))
4. I plan to register for the 898 course in (enter term and year):	or 🔲 I previously registered for the 898
5. Title (Limit 12 words): (Report any title change to the Division of Graduate Studies	s prior to filing completed work.)
6. Brief statement of project and research methods (<i>must fit in space allotted</i>):	
\frown	
7. Projected timeline for completion of culminating experience	1
Complete in detail with your advisor. Indicate dates when sections/species work will b	due to far the for review.
PLAN FOR COMPLETION OF CULMINATING	EXPERIME
LIST COMPONENTS OR SECTIONS FOR COMPLETION	DATES TO BE SUBMITTED TO FACULTY FOR REVIEW
<u> </u>	
I PLAN TO COMPLETE MY DEGREE IN: □ FALL □ SPRING □SUMMER YEAR	
I have reviewed the above with my committee members and agree to the terms of	f the projected timeline
STUDENT SIGNATURE DATE	

COMPLETE PAGE 2 AND OBTAIN ALL REQUIRED SIGNATURES

8. IF YOUR PROJECT INVOLVES RESEARCH WITH HUMANS, ANIMALS OR BIOLOGICAL SPECIMENS (cells, tissues, etc.), YOU MUST PROVIDE ADDITIONAL DOCUMENTATION:

Depending on the nature of your project, SF State may require you to submit information to the Human and Animal Protections (HAP) unit for project **registration** or **approval**. Contact HAP at <u>protocol@sfsu.edu</u> or 415-338-1093.

- 1. If you have received confirmation of *approval* or *determination* through HAP: <u>Attach</u> the official approval or determination notice and select one of the following:
 - □ My protocol has been approved by the IRB or IACUC and I have attached the approval notice.
 - □ My project has been determined to be Exempt or Excepted by HAP and I have attached the notice of determination.
- 2. If your project has been submitted to HAP and is under review, provide the date submitted to HAP: _____, and indicate the submission type:
- 3. If your research is covered under schedule else's protocol, you need to register with HAP, and indicate one of the following:
 - My project is covered under al SFSU acult member's protocol. Protocol #: ______ (if already approved).
 - □ My project is covered under an approve process at a coner institution.
- 4. If you are UNSURE if your project is considered <u>human subjects reaction</u>, submit an Application for Determination of Exemption to HAP: <u>https://research.sfsu.edu/content/application-determination exemption</u>
- 5. If you are UNSURE if your project is considered <u>animal research</u>, contact H at protocologists.edu or 415-338-1093.
- 6. If you are conducting research using <u>biological specimens</u> (e.g., tissues, alls, etc.), you must egister the work with HAP and attach their official notice of exception or approval.

IMPORTANT: DO NOT BEGIN YOUR RESEARCH UNTIL YOU RECEIVE NOTICE OF AN ROVAL, EXEMPTION OR EXCEPTION

REQUIRED NAMES AND ORIGINAL SIGNATURES

9. Supervising committee: must include a minimum of two TENURED or TENURE TRACK faculty members from the student's major department

SIGNATURE	TYPE/PRINT NAME, ACADEMIC RANK AND DEP	T. EMAIL (REQUIRED)
ner committee member(s):		
d b		
SIGNATURE	TYPE/PRINT NAME, ACADEMIC RANK AND DEP	Г.
	TYPE/PRINT NAME ACADEMIC RANK AND DEP	 r
SIGNATURE	TYPE/PRINT NAME, ACADEMIC RANK AND DEP tor: I have reviewed the above proposal including the composition are requirement for the master's degree in the major indicated.	Γ. of the supervising committee and find
SIGNATURE Department chair/graduate coordina ceptable for meeting the culminating experience SIGNATURE	TYPE/PRINT NAME, ACADEMIC RANK AND DEP tor: I have reviewed the above proposal including the composition are requirement for the master's degree in the major indicated. TYPE/ PRINT NAME AND TITLE	Г. of the supervising committee and find
SIGNATURE Department chair/graduate coordina ceptable for meeting the culminating experience SIGNATURE	TYPE/PRINT NAME, ACADEMIC RANK AND DEP tor: I have reviewed the above proposal including the composition the requirement for the master's degree in the major indicated. TYPE/ PRINT NAME AND TITLE FOR OFFICE USE ONLY	Γ. of the supervising committee and find

Human and Animal Protections http://research.sfsu.edu/protocol

Human and Animal Protections at San Francisco State University supports the work of the Institutional Review Board (IRB) and the Institutional Animal Care and Use Committee (IACUC). The IRB and the IACUC are charged with protecting the safety and welfare of humans and animals used in research at or in conjunction with this university. The committees do not expect research to be free from risk, but do expect the investigator to be aware of the risks, to minimize risk when possible, and to take appropriate precautions whenever necessary.

Human & Animal Protections Phone: (415) 338-1093 E-mail: protocol@sfsu.edu

Announcing Three (3) Year Approval for Qualifying Minimal Risk Research

Utilizing flexibility available under our Federal-wide Assurance (FWA) regarding certain study approval periods, the Institutional Review Board and ORSP - Human and Animal Protections are pleased to announce the following change in policy. Effective May 1, 2014, the IRB will begin issuing three (3) year approvals for faculty research that qualifies for this extended approval period for new protocols. *To qualify, the research must:*

- 1. involve no more than minimal risk to participants (as defined by <u>45 CFR 46.102</u>);
- 2. not be supported by federal funds; *and*
- 3. not be subject to federal oversight.

Submitting an Animal Protocol

http://research.sfsu.edu/protocol/animal protocol

An animal protocol must be submitted to HAP to begin the review process for any research and teaching projects using live, vertebrate, non-human animals, as required by federal law and SFSU policy.

In addition, all researchers using animal subjects are required to complete the online Animal Welfare course, "Working with the SFSU IACUC," which takes approximately 2 hours. A course completion report will be issued after you complete the course. The certificate must be provided to HAP. The certificate is valid for 3 years. Protocols cannot be approved without this certification.

To register for the course, go to http://www.citiprogram.org/

- Proceed directly to "New Users Register Here."
- Choose "San Francisco State University" from the drop-down menu.
- Click "Submit."
- Choose a user name and password. Write them down. You will need them again if you choose to take the course in more than one session, or if you ever need another copy of your course completion report.
- Fill out the required fields in the next two screens. When directed to the CITI course enrollment procedure page, please scroll down to the bottom of the page and click on "Question 1."
- The required course is "Working with the SFSU IACUC." When you finish the required course, optional courses will be available.
- Scroll down to the bottom of the page and click on "Submit." You will be redirected to the Learner's Menu.
- Scroll halfway down the page and click on "Not Started-Enter."

This will take you to the Introduction and modules required to complete the course.

Animal Subjects Forms Library

http://research.sfsu.edu/protocol/forms_anim

Animal Subjects Policy Library

http://research.sfsu.edu/protocol/policies anim

Day of your Defense Required Documents

(please contact the biology graduate administrator with questions: Giovanna Tuccori: gmt@sfsu.edu)

Biology 895 (Research Project – 4 units)

- Report of Completion (Electronic as of summer 2019)
- (Grade Change *if required*)

Biology 898 (Master's Thesis - 4 units)

- Report of Completion (Electronic as of summer 2019)
- Grade Change (*if required*)

Process

https://grad.sfsu.edu/content/thesis-dissertation-written-creative-worksubmission-process

*Grade change form required, only if you did not complete Biology 895 or 898 in the semester you registered for it.

Steps to Graduation <u>https://grad.sfsu.edu/content/continuing-students</u>

Report of Completion

(Electronicaly initiated by the head of your committee as of Summer 2019)

San Francisco State University Division of Graduate Studies ADM 254

REPORT OF COMPLETION OF SPECIFIED GRADUATE PROGRAM REQUIREMENTS				
Degree Objective: Master of	Major			
Concentration (if applicable):	Emphasis (if applicable):			
Name: E-mail:	Student ID:			
Check as applicable:				
GRADUATE PROGRAM REQUIREMENTS (requires only the signature of major advisor or graduate coordinator)	CULMINATING EXPERIENCE (Requires signatures of all committee me chair or graduate coordinator)	REQUIREMENT(S) mbers as well as department		
Met conditions required to obtain Classified Status as specified at time of admission to program	Supervised Field Internship (892)			
Examination for validation of outdated course work (7-year	Creative Work Project (894)			
Extension)	Field or Research Project (895)			
- Foreign Language Examination (specify).	Seminar on Field Studies (EED 890))		
Other (specify):	Comprehensive Written Examinatio	n (896 EXM)		
	Comprehensive Oral Examination	vice (805)		
REQUIRED SIGNATURES: In the case of culminating experience requeres Proposal for Culminating Experience Requirement form filed in the Divis This is to certify that the above requirements were: Completed sa	irements, the faculty signing should be the stion of Graduate Studies. atisfactorily on	same as those listed on the		
Signature of Committee Member	PRINTED Name and academic rank			
Signature of Committee Member	PRINTED Name and academic rank			
Signature of Department Chair or Graduate Coordinator	PRINTED Name	Date		

Accepted by Division of Graduate Studies

Date

Petition for Grade Change – Example

(Fill this form out if you received an "RP" (Report in Progress) grade for your 895 or 898.)

SAN FRANCISCO	Smith, John	123456789			
STATE UNIVERSITY	Last Name First Name Middle Initia	Student ID Number			
PETITION FOR GRADE CHANGE - REPORT OF MAKE-UP OF INCOMPLETE					
A grade of Incomplete will not be changed after a degree or credential has been awarded. See the bulletin for details. An Incomplete must be completed within one calendar year immediately following the end of the term in which it was assigned. If there are extenuating circumstances and the one year limit has not passed, the student may request an extension of the one-year limit through a Petition for Waiver of College Regulations. Petitions must be delivered to the Registrar's Office at One Stop Student Services Center, 558 101 by staff members only. Petitions will not be accepted by students.					
REPORT OF MAKE-UP OF INCOMPLETE RETITION FOR GRADE CHANGE					
Requires action by Instructor and Department Chair. Requires action by Instructor and Department Chair. Most grade changes can be done on Web Grades. Note: If request includes grading option change please use <u>Waiver of College</u> <u>Regulations</u> petition instead of this form.					
Dept. & Course #: Biology 895 or 898	Schedule #: 123456 Term/Yea	r course taken: Fall 2016			
Units: 4 Course Title: BIOL 895	Research Project (Units: 4) or BIC	DL 898 Master's Thesis (Units: 4)			
Address: 1500 Maple Street	City: San Francisco	State: CA Zip Code: 94123			
Dhone Number: (A1E) EEE 7979	E-mail	email stru edu			
Phone Number: (415) 555-78/8		@mail.sisu.edu			
Student's reason for requesting a grade	change:				
ACTION BY INSTRUCTOR: Previous Grade: RP Date work submitted to instructor: Jul 5, 2017					
New Grade Plus 🔍 A	pproved 🗌 Denied				
Minus Reas	Reason Approved or Denied:				
CR Neither Com	Completed Master's course work				
Instructor Name: Professor James Jones Instructor Signature: Date:					
ACTION BY DEPARTMENT CHAIR: 🗴 Approved 🔲 Denied					
Reas Com	on Approved or Denied: pleted Master's course work				
Dept. Chair Name:	Dept. Chair Signature:	Date:			

Registrar's Office Use Only	New Grade	Previous Grade	Date Reco	rded MMDDYY
IF GRADE CHANGE REQUEST ALSO INCLUDES A GRADING OPTION CHANGE PLEASE REFER TO THE <u>WAIVER OF COLLEGE REGULATIONS PETITION</u>			Reset Form	Print Form

Culminating Experience Continuous Enrollment

Maintaining Graduate Student Status

All graduate students are required to maintain continuous enrollment through completion of degree requirements or lose graduate student standing at SF State. A student who does not enroll for two consecutive semesters loses graduate student standing and must reapply for admission to the University and to the major department.

Culminating Experience Course Enrollment

Enrolling in the Culminating Experience course is the final step toward completing your degree. Once you enroll in your Culminating Experience course, you are expected to complete your degree within two semesters or maintain continuous enrollment until you earn your degree. You are not required to enroll in coursework the semester immediately following enrollment in your Culminating Experience (CE) course if your Culminating Experience has not been completed.

You are allowed a "grace" semester in which to complete your Culminating Experience and earn your degree. For example, if you enroll in your Culminating Experience course in Spring 2015, you are permitted to continue your work through the Fall 2015 semester without enrolling. However, if you do not complete your Culminating Experience by the end of the Fall 2015 grace semester, you must enroll Spring 2016, and each semester thereafter until you earn your degree.

Continuous Enrollment through CEL 499 Requirement

If you do not complete your Culminating Experience after the "grace" semester following enrollment in your Culminating Experience course, you are required to maintain continuous enrollment through the College of Extended Learning (CEL). You must enroll in a Culminating Experience Continuous Enrollment course under your college name: in your case SCI 499.

Students <u>must</u> enroll in CEL 499 before the university's add/drop deadline (the add/ drop deadline can be found on the Registrar's Office website: <u>http://www.sfsu.edu/~admisrec/reg/regsched.html</u>).

Enrollment in the CEL CE course provides students access to SFSU libraries, disciplineassociated laboratories and facilities, and Culminating Experience advisors. If you do not maintain continuous enrollment, and wish to return to complete the degree, you will need to reapply to the university (readmission is not guaranteed) and enroll in the CEL course for the semester you are readmitted and every semester after until earning your degree. The 7-year time limit to degree, from earliest course in your degree program to date of graduation, applies. For more detailed information please refer to Academic Senate Policy S08-246 or to the SF State Bulletin: <u>http://bulletin.sfsu.edu</u>

To register for your CEL 499 Course:

- 1. Use this link, <u>http://www.cel.sfsu.edu/courses/classes-spring2015.cfm</u>, to find the available Continuous Enrollment courses for this term. Scroll down or click the "C" alpha to find 'Continuous Enrollment.' Here you can write down the class number you will need for enrollment in the appropriate CEL 499 course based on your college.
- Check to see if you have the necessary CEL 499 Course Requirement hold in your "Student Center." This hold will appear under "Holds" on the right side of your "Student Center". If you **do not** have this hold, stop and contact Graduate Studies at 415-338-2231. If the hold appears on your record, proceed to Step 3.
- 3. Enroll using the class number you noted by contacting Enrollment Services at 415-405-7700 (Enrollment Services will assist you with payment options).

Applying for Graduation

To apply for graduation follow the instructions found at the SFSU Graduate Division Website:

http://grad.sfsu.edu/content/apply-to-graduate

Biology Department FAQs

Whom can I call for help?

If you have an emergency on campus, pick up a campus phone and dial 911. (If you use your cell phone, you will be routed from the city dispatcher back to SFSU Police. It takes a little longer.) For non-emergencies to Campus Police call 415-338-7200. If you are dialing from a campus phone, dial 8-7200

For issues with labs (chemical spills, equipment malfunction, etc.) call Justin Chan in the Biology Stockroom located at Hensill Hall 539. The phone number is 415 405 0426.

Where do I get keys to my lab and the building?

Go to the Biology Stockroom, Hensill Hall 539 to inquire about getting keys.

What is a 24-hour pass and why do I need it?

Campus Police patrol Hensill Hall regularly to ensure our safety - Hensill Hall is located right on 19th avenue, a busy street in San Francisco. This makes it a target for thieves. To help Campus Police determine if someone is in the building legitimately at night and on weekends, we issue 24 hour passes that must be renewed yearly. Keep this pass in your lab or in your wallet and show it to Campus Police when asked. To obtain the pass, see Justin Chan at the Biology Stockroom. After it has been approved, it will be returned to your advisor, who needs to give it back to you.

Where do I find information about upcoming events?

- 1) You should receive by email the Biology Chair's Weekly Digest. Look for great achievements from our students, faculty, and staff. Learn about funding opportunities. Be alerted about upcoming deadlines and events.
- The Biology Department website: <u>http://biology.sfsu.edu</u>
 You'll find links to our weekly seminar series and news items.
- 3) The Biology Department newsletter available once per semester in the Biology Department office. See highlights of our department research programs and learn about what our alumni are accomplishing.

Where can I find out about Lab Safety Procedures?

The College of Science and Engineering has a website that constantly updates safety information. <u>http://www.sfsu.edu/~safety/</u>

In particular, there is specific information for students: http://www.sfsu.edu/~safety/staff/studentEmpl.html

Be sure to check in with your PI for a Safety Orientation that is required for all new lab personnel. This safety training will give you specific information about hazards in your laboratory.

What do I do if I have problems with another student/staff/faculty?

On occasions when you have encountered problems with others you cannot directly resolve and/or that make you feel uncomfortable, contact your research advisor to discuss your concerns. If you do not feel comfortable discussing your concerns or experiences with your research advisor, you can schedule an appointment with the Graduate Coordinator, Diana Chu (chud@sfsu.edu) or the Department Chair, Laura Burrus (lburrus@sfsu.edu) to discuss your concerns.

The University also has resources to address student concerns and complaints. Please read the information provided to help guide you to resolve problems. <u>http://vpsaem.sfsu.edu/content/student-concerns-and-complaints</u>

Other resources:

SF State fosters a campus free of sexual violence including sexual harassment, domestic violence, dating violence, stalking, and/or any form of sex or gender discrimination. If you disclose a personal experience as an SF State student, the course instructor is required to notify the Dean of Students. To disclose any such violence confidentially, contact: The SAFE Place - (415) 338-2208; <u>http://www.sfsu.edu/~safe plc/</u> or Counseling and Psychological Services Center - (415) 338-2208; <u>http://psyservs.sfsu.edu/</u>. For more information on your rights and available resources: http://titleix.sfsu.edu"

Manage Your Degree

Individual Development Plan Information

Individual Development Plans (IDPs) help to identify an individual's long-term career objectives and develop an individualized plan or process to achieve those goals. Furthermore, IDPs serve as an excellent communication tool between individuals and their mentors.

Goals and Benefits

Helps students:

-- Identify <u>long-term career options</u> they wish to pursue and the necessary tools to meet these

- -- Set short-term goals for improving current performance
- -- Communicate with mentors on achieving both short and long term goals

Helps mentors:

- -- Set <u>realistic expectations</u> that take into account the student's current skill set and future goals
- -- <u>Assess progress and give constructive feedback</u> based on student's performance and goals
- -- Focus on providing advice on those resources that fit the individual's career plan

Outline of IDP Process

The development, implementation, and revision of the IDP require a series of steps to be conducted by the graduate student and their mentor.

<u>These steps are an interactive effort</u>, and so both the graduate student and the mentor should participate fully in the process.

Basic Steps	For Graduate Students	For Mentors
Step 1	Conduct self-assessment.	
Step 2	Write an IDP. Share IDP with mentor and revise.	Review IDP and help revise.
Step 3	Implement the plan. Revise IDP as needed.	Establish regular progress review.
Step 4	Survey opportunities with mentor.	Discuss opportunities with student.

Implementing Individual Development Plans

For Graduate Students

Step 1. Conduct a Self-Assessment.

Assess your skills, strengths, and areas that needdevelopment. One on-line resource is: <u>http://myidp.sciencecareers.org/</u>

Other examples and information:

<u>http://sacnas.org/about/stories/sacnas-news/summer-2013/building-your-IDP</u> <u>https://docs.google.com/file/d/0B6jsUuSJqdDackxTMVp5eks2X2M/edit?pli=1</u> http://www.grad.umn.edu/prod/groups/grad/@pub/@grad/documents/asset/idpgradpdf.pdf

Take a <u>realistic look</u> at your current abilities. This is a critical part of career planning. Ask your peers, mentors, family and friends what they see as your strengths and your development needs. Consider your personality traits and what you are passionate about.

Outline your long-term career objectives. Askyourself: -What type of work would I like to be doing? -Where would I like to be in an institution or organization? -What is important to me in a career?

Step 2. Write an IDP.

The IDP maps out the general path you want to take and helps match skills and strengths to your career choices. It is a changing document, since needs and goals will almost certainly evolve over time as a graduate student. The aim is to build upon current strengths and skills by identifying areas for development and providing a way to address these. The specific objectives of a typical IDP are to:

Identify specific skills and strengths that you need to develop (based on discussions with your mentor).Define the approaches to obtain the specific skills and strengths (e.g., courses, technical skills, teaching, and supervision). Map out a timeline and plan to attain yourgoals.

Step 3. Consult with your Mentor about your plan.

Identify developmental needs by comparing current skills and strengths with those needed for your career choice. Prioritize your developmental areas and discuss how these should beaddressed. Solicit advice and develop strategies about tackling the approaches you have defined to obtain specific skills and strengths. Discuss the time frame for short-term goals and if they arerealistic. Identify career opportunities and select from those that interestyou. Revise the IDP as appropriate.

Step 4. Implement Your Plan.

The plan is just the beginning of the career development process and serves as the road map. Now it is time to take action!

Put your plan into action.

Revise and modify the plan as necessary. It will need to be modified as circumstances and goals change. The challenge of implementation is to remain flexible and open to change. Review the plan with your mentor regularly. **Revise the plan** on the basis of these discussions

For Mentors

Step 1. Become familiar with available opportunities and resources.

By virtue of your experience, you should already have knowledge of some career opportunities, but you may want to familiarize yourself with other career opportunities and trends in job opportunities.

You may also want to consider resources at SFSU that will help your student gain skills and technical abilities necessary to attain their goals.

Step 2. Discuss opportunities with graduate student.

This needs to be a <u>private, scheduled meeting</u> distinct from regular research-specific meetings. There should be adequate time set aside for an open and honest discussion.

Step 3. Review IDP and help revise.

Provide *honest feedback* to help the graduate student set realistic goals. Discuss BOTH current strengths and weaknesses as you perceive them.

Provide information on *resources* or help that is available to help them gain the skills and expertise to meet their goals.

Agree on a development plan that will allow the graduate student to be productive in the laboratory and adequately prepared for their chosen career. Give feedback about the timeline and feasibility of reaching the goals in the time frame given.

If the student is taking research for credit, discuss expectations the student should meet to achieve specific grades.

Step 4. Establish regular review of progress.

The mentor should meet at regular intervals with the graduate student to assess progress, expectations, and changing goals.

Each semester, the mentor should give feedback on the progress the student has made in attaining their short-term goals and how it relates to achieving their medium and long-term goals. This can be considered a performance review that is designed to analyze what has been accomplished and what needs to be done.

If the student is taking research for credit, discuss how the students has met or not met expectations set at the beginning of the semester.

A written review can be very helpful in objectively documenting accomplishments. An effective means of communication can be to have the student write an email after your meeting to summarize the goals and expectations so that both you and the students are clear on the implementation of the plan.
Ten Tips for a Successful Mentor/Mentee Relationship

A successful mentor/mentee relationship should be fulfilling and beneficial for all involved. Utilize these ten tips for a more effective and productive relationship:

1. Keep communications open.

Mentee: Be up front. Let your mentor know what your goals are and what you hope to take away from the program.

Mentor: Help your mentee set realistic expectations. Also, if you know you will be unavailable because of business or personal travel, let them know.

2. Offer support.

Mentee: Remember that your mentor is there for you, but is only a guide. *Mentor:* Encourage communication and participation. Help create a solid plan of action.

3. Define expectations.

Mentee: Review your goals. Make sure your mentor knows what to expect from you. *Mentor:* Help set up a system to measure achievement.

4. Maintain contact.

Mentee: Be polite and courteous. Keep up with your e-mails and ask questions. *Mentor:* Respond to your e-mails. Answer questions and provide advice, resources and guidance when appropriate.

5. Be honest.

Mentee: Let your mentor know if you don't understand something or have a differing opinion. *Mentor:* Be truthful in your evaluations, but also be tactful.

6. Actively participate.

Mentee: Listen. Be engaged. Ask questions. *Mentor:* Engage in your own learning while you are mentoring, collaborate on projects, ask questions and experiment.

7. Be innovative and creative.

Mentee: Offer ideas on what activities and exercises you can do together. *Mentor:* Share your ideas, give advice and be a resource for new ideas.

8. Get to know each other.

Mentee and Mentor: Remember that people come from diverse backgrounds and experiences. Get to know each other on an individual basis.

9. Be reliable and consistent.

Mentee and Mentor: The more consistent you are, the more you will be trusted.

10. Stay positive!

Mentee: Remember that your mentor is offering feedback and not criticizing. *Mentor:* Recognize the work the mentee has done and the progress made.

Individual Development Plan



The IDP will help you define and plan your academic and professional **goals**. You will also develop an **action plan** to help guide your **progress** through the master's program. Review this document with your **Research Advisor** to get help and feedback at the beginning and end of each semester.

Master's Student Name: _____

Major Advisor's Name: _____

Please Sign and date after the student and advisor reviewed the IDP:

Student_____Date____

1. Please explain your career aspirations.

A. Long-term goals:

- B. Short-term goals:
- 2. What is your target date for graduation? _____
- 3. Given your target date for graduation, please list the courses you need to complete to fulfill your degree requirements? 30 units total are required. You can obtain the Advancement to Candidacy Form for a list of requirements for your concentration from the Biology Office.

Semester and Year	Course Number	Course Title	Units	Completed/In Progress/To Do

4. If you are considering applying to academic programs after graduating from SFSU, please fill out the table below. Look up requirements for admission at these institutions. Work in consultation with your advisor to get advice about how best to prepare for these programs.

Your UG Major			
Your GPA			
GRE/MCAT Scores			
Other Test Scores			
Prior Research			
Experience			
	Training Program 1	Training Program 2	Training Program 3
Institution Name			
Program			
Test Requirements			
Other Require-			
ments			

5. Describe the overall goal of your research, research question(s) to be addressed, and general approach of your current research project. Work with your advisor to define these goals and find relevant resources to help you.

Overall Goal:

Research Question(s):

General Approach(s):

6. While at SFSU, you will need to develop your skills and abilities to achieve your short-term and long-term goals. Complete the table below to help you identify the skills to prioritize.

Below is a list of my talents and strengths that I can bring to my SFSU research training experi- ence	Below is a list of skills and knowledge that I would like to enhance. (For example, research techniques, presentations skills, and other skills.)

7. Create a timeline to achieve these goals. Below is an example.

Fall Semester 2017: Read literature and develop thesis project with advisor Spring Semester 2018: Begin experiments and form a thesis committee Summer Semester 2018: Gather data for thesis and present poster at meetings Fall Semester 2018: data analysis conducted, and apply to graduate (Ph.D. programs) Spring Semester 2019: Finish writing thesis and present to the department

Checkpoint (Month, Year)	Milestone

8. Establish your plan for meeting with your academic and research mentors.

Examples of meetings with mentors and targets

- Meet with Research Adviser once a week
- Meet at least quarterly to address career counseling and professional development activities
- Meet with thesis committee once every semester

Meeting Date(s)/Frequency	Meeting Purpose/Target/Goal

9. An important aspect of the research training experience is the opportunity to attend and present your research at a scientific meeting. Please discuss these options with your mentor to plan the appropriate venue for you to share your results with the broader scientific community. When and where are these conferences and deadlines for submission of abstracts and travel awards.

10. List the days and times that you plan to devote towards your research project this semester. Communicate with your advisor about how your plan to set realistic expectations about goals for the semester. Establishing an achievable regular schedule will help to ensure you reach your short-term goals.

Times	Monday	Tuesday	Wednesday	Thursday	Friday	Weekend

11. Given all the things that you would like to achieve, it is important for you to maintain your health and well-being. List below specific coping mechanisms and support that will help you most while pursuing your goals.

Independent Development Plans – Electronic Resources

Independent Development Plan and Self-Assessment Information

- Science Careers: an on-line IDP building guide: <u>http://myidp.sciencecareers.org/</u>
- SACNAS Building Your Individual Development Plan (IDP): A Guide for Undergraduate: <u>http://sacnas.org/about/stories/sacnas-news/summer-2013/building-your-IDP</u>
- SACNAS IDP worksheets: https://docs.google.com/file/d/0B6jsUuSJqdDackxTMVp5eks2X2M/edit?pli=1

Resources

- Fiske, P. S. (2001). <u>Put Your Science to Work: The Take-Charge Career Guide for</u> <u>Scientists</u>. Washington, D.C.: American Geophysical Union.
- Bolles, R. N. (2002). <u>What Color is your Parachute? A Practical Manual for Job-Hunters and Career-Changers</u>. Berkeley, Calif.: Ten Speed Press.
- Heiberger and Vick, eds. (1996). <u>The Academic Job Search Handbook (</u>2nd ed.). University of Pennsylvania Press.
- Reis, R. M. (1997) <u>Tomorrow's Professor. Preparing for Academic Careers in Science and Engineering</u>. New York: IEEE Press. 1997.
- Barker, K. (2002). <u>At the Helm: A Laboratory Navigator</u>. Cold Spring Harbor, NY: Cold Spring Harbor Laboratory Press.
- Robbins-Roth, C. ed. (1998). <u>Alternative Careers in Science. Leaving the Ivory Tower</u>. San Diego, Calif.: Academic Press.
- Kreeger, K. Y. (1999). <u>Guide to Nontraditional Careers in Science</u>. London: Taylor & Francis Group.
- Pfund, C., Pribbenow, C., Branchaw, J., Miller Lauffer, S., and Handelsman, J. (2006). The merits of training mentors, Science (311: 473-474).
- Handelsman, J., Pfund, C., Miller Lauffer, S., and Pribbenow, C. (2005). Entering mentoring: A seminar to train a new generation of scientists. The Wisconsin Program for Scientific Teaching, University of Wisconsin.

Academic Career Opportunities

- American Association for the Advancement of Science <u>http://sciencecareers.sciencemag.org/</u>
- The Chronicle of Higher Education: <u>http://chronicle.com/jobs/</u>
- Federation of American Societies for Experimental Biology http://careers.faseb.org/jobseeker/search/results/
- On-line Listserv: <u>Tomorrow's Professor</u>: <u>https://tomprof.stanford.edu/</u>

WOMEN in Cell Biology/ MINORITIES Affairs A Shared Vision of Mentoring from Different Perspectives







Christopher M. Hines

Angela Wandinger-Ness

Most scientists have benefited from mentoring or have served as a mentor. Here we offer our perspectives on these processes. Although we are at different places in our careers and experiences, we agree on some core components of mentoring: the importance of recognizing individual needs and experiences, the possibility of building long-lasting relationships through mentoring, and the need to recognize that mentoring is a two-way relationship.

Through our experiences as "outsiders," either as a member of an underrepresented minority (Himes) or as a woman (Wandinger-Ness), we have gained insights as both mentees and mentors.

Acknowledging Individuality and Personal Experiences

There is no blank slate; each of us is a composite of our personal and professional life experiences. It is therefore important for both mentors and mentees to acknowledge individual strengths and weaknesses and to draw on metacognition. We have found it helpful to articulate individual needs both orally and in writing to ensure that there is agreement on what each partner in the mentoring relationship needs and can provide. This is crucial to get past the danger of stereotyping and projecting goals onto the partners.

Formal individualized career development plans are helpful for both partners to reach agreement and get what they need. There are a number of online resources for getting started (e.g., the plans for graduate students provided by University of Minnesota¹ and the Medical College of Wisconsin,² for postdoctoral fellows by the Federation of American Societies for Experimental Biology,³ and for junior faculty by the University of California, San Francisco, Division of General Internal Medicine⁴).

For mentors, such a process is a great way to attend to the individuality of trainees and their specific needs and goals. For mentees it enables the articulation of specific priorities the achievement of which is measurable and visible. Developing an honest, mutually agreed to plan is central to achieving goals and for success that is satisfying for both the mentor and the mentee.

Frequent evaluation of progress toward goals through self-assessment and mentor feedback helps ensure that individual needs are met. It can identify problems that need attention early before a crisis develops. Sometimes success depends on seeking and recommending counsel from others. Widening the mentoring net may be important to match mentee needs with individual mentor strengths. There may be difficult issues to be broached with which other potential mentors have more experience. For example, for women and minorities, the

Frequent evaluation of progress toward goals through self-assessme and mentor feedback helps ensur that individual needs are met.



"imposter syndrome" and being "iconic" or "a poster child" are lived experiences that can create a sense of isolation. Receiving wisdom from women and minorities who have worked through these challenges is very meaningful and especially helps mentees who feel "different" or isolated to move forward.

Finding suitable role models is often the key to helping mentees develop a sense of inclusion. Both of us have identified role models throughout our careers: peers, teachers, and people in leadership positions who served as mentors or advisors and

were essential for visualizing the successes of women and minorities and overcoming low points or self-doubt. Relationships founded on mutual trust and honesty enable mentor and mentee to have a dialog about their individual needs.

Building Long-Lasting Relationships: Mentoring as Family

Mentoring relationships often begin with family members and expand to include particular lab members, lab directors,

colleagues, and peers. These relationships grow and mature over time and often continue long after mentees have left the home, lab, institution, or job and gone on to independent careers.

Like family relationships, mentoring relationships can be complex. Mentors may have to serve different roles. Sometimes they provide nurturing and support when mentees are in need of encouragement and perspective. At other times mentoring, like being a parent, requires pushing and urging the mentee, which may initially be resented by mentee. Later the mentee may realize that the mentor had his or her best interests at heart.

As with family, retaining contact, sharing goals and aspirations, celebrating success, and having honest, two-way dialogue about difficult issues are all central to vibrant, long-lasting mentoring relationships. Mentors often enjoy hearing from former trainees and can offer continued support in the form of letters of recommendation, advice, and counsel long after mentees have moved on. And of course mentees can benefit from reaching back to past mentors, providing updates on their own progress and receiving advice.

The extended lab and scientific family when nurtured and supported brings a special reward: being part of a vibrant network through which new connections are made, information and experiences are exchanged, and transitions to the next career phase are facilitated.

Reciprocity through Mentoring Platforms and Reverse Socialization

Most of us have occupied several "rungs" on the mentoring ladder during the course of our careers. Indeed, it is common to be simultaneously both a mentor and a mentee. In the more standard view of mentoring, the mentor of some higher status or level of knowledge gives assistance or guidance to the mentee, who has less experience. In other words, individuals on higher rungs provide information and opportunities for those at lower levels, while they themselves receive advice from superiors. In this view, the mentoring ladder is a uni-directional progression. This perspective on mentoring excludes the idea of reciprocity between mentee and mentor and

the opportunity for the mentor to learn from the mentee.

However, we can expand the value and benefit of the mentoring relationship by acknowledging the deeper interactions between mentor and mentee. In this alternative view, the mentoring ladder is seen as a two-way progression with each ladder rung as a platform that allows individuals to meet on the same level and gain and learn from those traditionally considered above or below on the ladder. Common platforms are where mentor and mentee gain mutual experience from each other, and this model recognizes the reciprocal reward for the mentor and mentee. Reciprocity is a key feature of this version of the mentoring ladder. The process whereby traditional teaching roles are reversed and, for example, a child teaches the parent or a mentee teaches the mentor is called reverse socialization.

In summary, through our diverse experiences, we find that mentoring entails acknowledging individuality and personal experiences, building

sharing goals and aspirations, celebrating success, and having honest, two-way dialogue about difficult issues are all central to vibrant, longlasting mentoring

relationships.

[R]etaining contact,

long-lasting relationships (mentoring as family), and reciprocity through mentoring platforms. These core foundations have enhanced our mentoring relationships and contributed to our success and satisfaction. n

– Christopher M. Himes, Massachusetts College of Liberal Arts, and AngelaWandinger-Ness, University of New Mexico

Notes

¹ www.grad.umn.edu/career/IDPgrad.pdf.

²www.mcw.edu/VirtualCareerCenter/ IndividualDevelopmentPlan.htm.

³ www.faseb.org/portals/0/pdfs/opa/idp.pdf.

⁴http://dgim.ucsf.edu/facultydevelopment; see "Individual Development Plan Form."

The authors thank 2005 E.E. Just Awardee Maggie Werner-Washburn and ASCB Minorities Affairs Committee Chair Renato Aguilera for helpful comments.

Christopher M. Himes has the perspective of a mentee who recently began serving in a mentoring role. He has benefited from mentoring and research opportunities gained through programs for students from groups traditionally underrepresented in graduate education. He has recently contributed back to such programs, mentoring women and other students from underrepresented backgrounds. He was an Institutional Research and Career Development Award (IRACDA) Fellow of the Academic Science Education and Research Training (ASERT) Program at the University of New Mexico. He is now STEM Outreach Manager for the Massachusetts College of Liberal Arts. As a student, Himes received support from the Ronald E. McNair Post-Baccalaureate Program. The McNair program commemorates the achievements of African American physicist and astronaut McNair and supports the training and mentoring of firstgeneration college students with financial need and students from groups traditionally underrepresented in graduate education and with strong academic potential. Himes has recently served as a mentor through the Undergraduate Opportunities Program at the University of New Mexico.

Angela Wandinger-Ness is Director of the IRACDA ASERT program at the University of New Mexico. She draws on cultural heritage and a love of science instilled by parents, inspired teachers, and key role models. As the longstanding PI of a federally funded research program and director of a training program with a focus on increasing diversity in science, she has advised, nurtured, and mentored more than 100 undergraduate, graduate, and medical students, postdoctoral fellows, and junior faculty toward successful and independent careers. The majority were women and trainees from various cultural, ethnic, and socioeconomic backgrounds.



A New Look for ASCB's Journals

Molecular Biology of the Cell and CBE – Life Sciences Education have unveiled updated and redesigned websites. Readers will enjoy the new, more contemporary design, better and more flexible use of screen real estate, and enhanced functionality.

New features include:

- n Links to selected articles on the homepage
- n Lists of most-read and most-cited articles
- n Links to other ASCB resources
- n The ability to view abstracts from the table of contents by mousing over links
- n An expandable reading frame for HTML versions of articles

n RSS feeds

More enhancements are coming soon. Check out the redesigned websites: www.molbiolcell.org and www.lifescied.org. -W. Mark Leader



SF State Biology Mindset is the Growth Mindset.



Rule focus	Fixed Mindset	Growth Mindset
Learning	<i>Look smart at all costs</i> - Students, when given a choice between a challenging task and a familiar task, opted for the latter.	LEARN - students believed they were able to learn.
Challenges	Don't make mistakes - Mistakes were viewed as a lack of ability with the reasoning that if they had the intelligence they would do well the first time.	Take on challenges - Students were motivated to take on challenges as they knew they would learn from these.
Effort	Don't work hard - Students believed that the need for hard work suggested that they had low intelligence - linking to rule 2.	Work hard - Students believed that effort enhanced ability.
Responding to mistakes	If you make mistakes don't try to repair them - When students did badly in a test, most were less likely to study for the next one and some would consider cheating.	Confront deficiencies and correct them - Students were eager to use their setbacks as a learning experience and continue to try to improve.

What Is Impostor Syndrome?

Can't take a compliment? Feel like a fake? Convinced you'll be unmasked at any moment? Welcome to the secret circle of high achievers suffering from Impostor Syndrome.

By Ellen Hendriksen, PhD, <u>Savvy Psychologist</u> June 3, 2016

What Is Impostor Syndrome?

Impostor Syndrome is a pervasive feeling of self-doubt, insecurity, or fraudulence despite often overwhelming evidence to the contrary. It strikes smart, successful individuals. It often rears its head after an especially notable accomplishment, like admission to a prestigious university, public acclaim, winning an award, or earning a promotion. Impostor Syndrome doesn't discriminate: people of every demographic suffer from feeling like a fraud, though minorities and women are hardest-hit. Impostor syndrome comes in 3 flavors:

Type #1: "I'm a fake.

The fundamental fear is being discovered or unmasked. Achievers often feel like they've made it thus far under wraps, but the day will come when their cover is blown and they will be revealed as a fake.

For example, Adelaide is a tenured professor at a prestigious university. She is regarded as one of the leading researchers in her field and frequently travels to conferences and workshops, often in a leadership role. Recently, Adelaide attended a high-powered meeting. She remembers feeling intimidated as introductions took place in the book-lined, richly-paneled, high-ceilinged room. Someone was introduced as an "esteemed professor." Adelaide looked around and realized, with a start, they meant her. "Internally, I was terrified," she remembers. "I just knew that everyone at that table knew what they were doing, had earned their place, and that a giant mistake had been made in inviting me. I felt like any minute a spotlight would shine on me and I would be asked to leave." Not only accomplished professionals feel the sting. Take 18-year-old Don for example. He graduated high school at the top of his class and is headed off to an Ivy League university in

the fall. He's terrified. "I'm convinced the admissions department made a mistake. That place is for geniuses, not for people like me. I don't belong there."

Type #2: "I got lucky."

The second flavor of Impostor Syndrome attributes achievements to luck. A twist on this is "I'm not smart/talented/gifted. I just work hard."

Take Gerald as an example. He is an investigative reporter for one of the last-standing wellregarded city newspapers. He has cracked several national stories and numerous awards hang on the wall of his office. Yet he says, "Every time a feature story goes to print, I'm convinced it will be the end of my career. I got my other stories—and these honors through sheer luck. I was just in the right place at the right time."

The "I just work hard" variation is especially common among women. For example, Inez is a software engineer at a well-known tech company. Her reviews are stellar and she's been promoted twice since she started. She arrives earlier than anyone in her otherwise allmale group and stays until the janitor goes home. "I haven't been programming since I was 14 like these other guys," she says. "I'm not a born engineer. I put in the hours just to stay afloat."

Type #3: "Oh, this old thing?"

In *It's a Wonderful Life*, George Bailey offers bombshell Violet a compliment. "Hey, you look good. That's some dress you got on there." Violet knows she's rocking it. She twirls her hair. "Oh, this old thing? Why, I only wear it when I don't care how I look," she says, and sashays off, stopping traffic.

Violet is being falsely modest, but in Impostor Syndrome, sufferers truly can't take a compliment. In the last variation of Impostor Syndrome, the receiver of an award or recognition discounts or downplays the honor. "I only got an A because the class was easy." "That race I won wasn't really important." "I must have been the only one who applied." "I'm not pretty; he's just saying that."

How Does Impostor Syndrome Happen?

Impostor Syndrome develops in a variety of ways. Here are 3 of the most common:

Source #1: You're so smart!

The work of Dr. Carol Dweck, Professor of Psychology at Stanford, sheds light on a common parenting mistake. Well-meaning parents often praise kids with labels like 'You're so smart!" or "You're so pretty!" These labels, while meant to be complimentary, actually hinder kids. How? They imply that there's nowhere left to grow. "You're smart" implies that "smart" is a you've-got-it-or-you-don't characteristic. Either you're smart or you're not, and there's nothing you can do to alter it. Therefore, whenever kids make a mistake, they question the "smart" label. "If I got a C this once, then maybe I'm not smart after all? Mom must be wrong." As a result, it stifles kids' willingness to try new things, for fear they might prove their label wrong. This lays fertile ground for Impostor Syndrome.

Source #2: One of these things is not like the others.

Women, racial minorities, or LGBT individuals may feel like they're living a high-achiever's version of the *Sesame Street* song, "One of These Things is Not Like the Others." Indeed, individuals who don't "match" the larger, majority culture of their school or company often struggle to feel legitimate. They may feel like they don't belong, despite qualifications and accomplishments.

Navigating unfamiliar waters without a role model or mentor can exacerbate this kind of Impostor Syndrome. For instance, being the first in the family to attend college or have a white-collar career is a pioneering achievement, but can feel like a floundering imitation without an experienced guide. First-generation achievers may feel out of step both at home and in their new environment.

Source #3: The side effects of meritocracy.

High achievers are only high achievers when compared to others. Such folks have been compared to others their whole lives—when earning grades, winning honors, being

selected into colleges, landing jobs. They often come out on top, which does two things. First, they value the process of comparison because they have done well by it. Second, they are extra alert to the process. Awareness of being evaluated and caring deeply about the outcome is an important mindset for success, but when it backfires, it lays a foundation for feeling like a phony.

9 Ways to Combat Impostor Syndrome

So what is a phony-feeling high achiever to do? Here are 9-ways to combat Impostor Syndrome.

1) Know that feeling like a fraud is normal

Impostor Syndrome is widespread. It is rampant in any exclusive circle, from high school honor societies to Nobel Prize winners. It is rarely discussed because each person feels they are keeping a secret. There is an element of shame and the fear of being discovered, so sufferers keep silent. However, whenever someone pipes up, hundreds more breathe a sigh of relief.

2) Remind yourself of what you've accomplished

Academics keep a curriculum vitae, roughly translated as "life's work." More than a resume, it is a list of everything they have accomplished. Do the same and read it over from time to time. Read your old letters of recommendation. If you've been given an award, read the inscription. You don't just look good on paper; you accomplished each and every achievement on that paper.

3) Tell a fan

Disclose your feelings to a trusted friend, your favorite teacher, or close colleague. Hopefully, you'll come away with a pep talk to bolster your spirits. Warning: change the subject if your fan simply tells you to stop feeling insecure. If you could stop, you would have already!

4) Seek out a mentor

Ask a senior colleague, teacher, or coach for guidance navigating work or school. If possible, seek out a mentor who matches your gender or ethnicity. Get-It-Done Guy has a wonderful article on Choosing a Mentor.

5) Teach

Or become a mentor. You'll be surprised how much you know. We often forget what it's like not to know something. Furthermore, as we become experts in a field or rise to the top of the class, we are conscious enough to realize how much we have yet to learn, which amplifies the sense of fraudulence. Only when we contrast ourselves with true newbies do we gain perspective. Remind yourself how far you've come by nurturing the next generation.

6) Sometimes it's OK not to know what you're doing

After experiencing any big life event, like starting at a new school or a new job, there is a steep learning curve of adjustment. Rather than hiding, think of yourself as a "public amateur" or a "purposeful impostor" - someone who is learning and gaining expertise in the public eye. It's OK to come to the table with nothing to offer, as long as you're enthusiastic about learning.

7) For kids, praise effort

To counteract the mistake of praising traits, as in "You're so smart!," praise effort instead. Compliment kids with, "You worked so hard on that!" or "You kept at it even when it didn't work out."

8) Build in an expectation of initial failure

The author Anne Lamott titles every new work "Sh*tty First Draft." My neighbor told her child, "Here's your new scooter. You have to fall off at least 10 times before you get good." Allow yourself similar leeway to stink it up at any new beginning.

9) Keep a little Impostor Syndrome in your pocket

Stay humble, my friends. A balancing point exists between Impostor Syndrome and slick, grinning egomania. Authentic modesty keeps you real.

So there we have it: 9 things you can do to things you can do to mitigate the effects of Impostor Syndrome. And of course, you're not alone. Simply remember the words of Tina Fey, a self-described impostor: "Everyone else is an impostor, too."

Funding Opportunities

FAQS ABOUT FUNDING

What are the costs for tuition for graduate students?

Find university fees here: http://bulletin.sfsu.edu/fees-financial-aid/fees-expenses/#text

What are my options for funding as a graduate student?

Application link: <u>https://biologysfsu.wufoo.com/forms/gtaga-general-application-fall-2019/</u>

Graduate Teaching Assistantships (GTA)

We offer all incoming students the opportunity to serve as GTAs for selected Biology courses. The courses assigned depend on the student's prior teaching and educational experiences, concentration, and academic record. Depending on the courses, the GTAs can earn (2018/2019 academic year current rates):

1-unit lab course: \$2648/semester 1-unit lab course + 1 unit discussion/lecture: \$3972/semester 2-unit lab course or 2x 1 unit lab courses: \$5,296/semester

GTAs usually teach 2x 1-unit courses or 1x 2-unit lab course, or can opt for the 1unit lab + 1-unit discussion option.

Graduate Assistant (GA)

Some biology courses need graders/assistants. Depending on the course, the following GA-ships can be assigned with approval of the faculty teaching that course (2018/2019 academic year current rates).

5 hours/week: \$1574/semester 10 hours/week: \$2952/semester 15 hours/week: \$4487/semester

Graduate Fellowships

The Student Enrichment Office (SEO) administers several programs that awards fellowships to students. <u>https://seo.sfsu.edu/</u>

Research Assistantships

Our SFSU faculty members conduct research funded by many external programs, including the NIH and NSF. Please ask the faculty members you are considering as mentors if they have funds available from their grants to support your work.

What are the classes like that I would GTA?

You can check the SFSU schedule to see when classes generally meet each semester. https://webapps.sfsu.edu/public/classservices/classsearch

BIOL 101 Human Biology Laboratory (1 unit lab)

Intended for non-biology majors. Laboratory exercises demonstrating scientific processes, including the scientific method, analysis of data, and drawing appropriate conclusions. Body structure and function, reproduction, development, heredity, and evolution.

<u>Time:</u> Each lab meets 1x for 3 hours each week. 1 hour mandatory GTA meetings are held weekly.

<u>Requirements:</u> General biology knowledge is sufficient. GTAs are given a detailed instructor's manual which helps supplement knowledge about human health and provides tips for orchestrating the lab activities. GTAs facilitate cooperative learning and group work and foster independent thinking by the students.

BIOL 150 The World of Plants Lab (1 unit lab)

Intended for non-biology majors. World of plants, their place in nature, and the relation to humans. Growing plants, field observations, and studies of the economic uses of plants.

<u>Time:</u> Each lab meets 1x for 3 hours each week. 1 hour mandatory GTA meetings are held weekly.

<u>Requirements</u>: General biology knowledge, background in plants/plant biology is preferred.

BIOL 213 Principles of Human Physiology Laboratory (1 unit lab)

Intended for non-biology majors. Laboratory exercises in mammalian physiology. <u>Time:</u> Each lab meets 1x for 3 hours each week. 1 hour mandatory GTA meetings are held weekly.

<u>Requirements:</u> General biology knowledge, background in physiology is preferred. GTAs are given a detailed instructor's manual that provides tips for orchestrating the lab activities. GTAs facilitate cooperative learning and group work and foster independent thinking by the students.

BIOL 230 Introductory Biology I (2 unit lab)

Intended for biology majors. Fundamentals of biology: chemical basis of life, cell structure, bioenergetics, plant and animal physiology, and genetics. <u>Time:</u> Each lab meets 2x for 3 hours each week. 1 hour TA meetings are held weekly. <u>Requirements:</u> General biology knowledge is sufficient. GTAs are given a detailed instructor's manual for orchestrating the lab activities. GTAs facilitate cooperative learning and group work and foster independent thinking by the students.

BIOL 240 Introductory Biology II (1 unit lab +1 unit discussion)

Intended for biology majors. Fundamentals of biology: gene expression, development, evolution, ecology, and the diversity of microbes, plants, and animals

<u>Time:</u> Each lab meets twice a week for 2 hours each (First 30 minutes is the 1 unit discussion portion and next 1.5 hours is the 1 unit lab portion – same room.) Mandatory TA meetings are held weekly.

<u>Requirements</u>: Ecology, evolution and systematics knowledge preferred. Basic background in animal and plant form and function also helpful. GTAs facilitate cooperative learning and group work and foster independent thinking by the students.

BIOL 313 Principles of Ecology (1 unit lab)

Intended for non-majors. Ecological principles and methods. Introduction to population, community, and ecosystem ecology. Trips to various habitats. <u>Time:</u> Each lab meets 1x for 3 hours each week. 1 hour TA meetings are held weekly. <u>Requirements:</u> General biology knowledge. Some experience in ecology is preferred.

BIOL 328 Human Anatomy (1 unit lab)

Restricted to sophomore or above standing with a major in biology, biochemistry, chemistry, clinical science, kinesiology. Gross structures of the human body. <u>Time:</u> Each lab meets 1x for 3 hours each week. 1 hour TA meetings are held weekly. <u>Requirements:</u> Prior coursework in human anatomy is preferred. This is a cadaver based lab.

BIOL 482 Ecology (1 unit lab)

Intended for biology majors. Interrelationships between organisms and their environment, studied at the individual, population, community, and ecosystem levels. Field trips to various environments.

<u>Time:</u> Each lab meets 1x for 3 hours each week. 1 hour TA meetings are held weekly. <u>Requirements:</u> Experience in ecology is preferred.

GTA Assignments are paid as follows:

1 section of a 1 unit lab course: \$2,648/semester 1 section of a 1 unit lab course + 1 unit discussion/lec: \$3,972/semester 1 section of a 2 unit lab course: \$5,296/semester 2 sections of a 1 unit lab course: \$5,296/semester

Other sources of funding:

Throughout the year, it is possible to apply for other funding. The due dates vary. Please consult the sites for when the applications are available and due. Links to some of these are below.

Biology: <u>http://biology.sfsu.edu/scholarships-and-funding/graduate</u>

College of Science and Engineering: http://cose.sfsu.edu/scholarships

The Student Enrichment Office: <u>http://seo.sfsu.edu/</u>



Biology Scholarships

Graduate Scholarships

• Nelson Scholarships will be awarded in the amount of \$3000/each to a MS degree candidate in Ecology, Evolution, and Conservation Biology

Go to <u>https://sfsu.academicworks.com/</u> to see the eligibility criteria and to submit an application.



Scholarships for Undergraduate and Graduate Students

ARCS Scholarships (\$10,000)

Awarded to eight graduate students in the Departments of Biology, Chemistry & Biochemistry, Computer Science, Earth & Climate Sciences, Mathematics, Physics & Astronomy

Robert W. Maxwell Memorial Scholarships (\$4,000)

Awarded to three to five graduate students in the College of Science & Engineering

College of Science & Engineering Advisory Board Scholarship (\$2,500)

Awarded to one graduate student in the College of Science & Engineering

Bruce A. Rosenblatt Community Service Scholarships (\$1,250)

Awarded to four undergraduate or graduate students in the College of Science & Engineering with 100 hours of Community Service

James C. Kelley Scholarship (\$1,000)

Awarded to one undergraduate or graduate student in the College of Science & Engineering with career orientation and/or interests in the field of Marine or Environmental science

David & Cary Cassa Memorial Scholarships (\$1,000)

Awarded to two College of Science & Engineering undergraduate students who live in San Francisco

Kenneth Fong Biology Scholarship (\$1,250)

Awarded to one undergraduate student in the Department of Biology

C.Y. Chow Memorial Scholarships (\$1,000)

Awarded to two undergraduate students in the Department of Computer Science or Mathematics

Pamela Fong Mathematics Scholarship (\$1,250)

State University

Awarded to one undergraduate student in the Department of Mathematics



For more information on additional criteria and to apply go to SAN FRANCISCO sfsu.academicworks.com, search for the scholarship name listed above. **Questions? Contact Lannie Nquyen at science@sfsu.edu**

San Francisco State University Student Enrichment Opportunities Office

Contact information: SF State University, SCI 200 415-338-1305 * seo@sfsu.edu

For application information see the SEO website: https://seo.sfsu.edu/

Undergraduate Scholarships:

NIH MARC - Maximizing Access to Research Careers (Stipend = \$13,104/year + Partial Tuition) & NIH RISE - Research Initiative for Scientific Enhancement (Support = \$11,544/year) & Genentech Foundation Jr/Sr Scholars (Stipend = \$13,200/year + Tuition) & Genentech Foundation Freshman/Sophomore Associates (Stipend = up to \$5,700/year)



For majors in Biology, Chemistry & Biochemistry, Physics, Mathematics or Computer Science interested in pursuing an advanced degree in a biomedical field.

Graduate Fellowships:

NIH MA-MS/PHD Bridge (Support = \$19,200/year + Tuition) & NIH RISE - Research Initiative for Scientific Enhancement (Support = \$21,000/year + Tuition) & NSF STC Center for Cellular Construction (with UCSF) (Support = \$21,000/year + Tuition) & Cell Design Institute (with UCSF) (Stipend = \$21,000/year + Tuition) & Genentech Foundation Scholars (Stipend = \$21,000/year + Tuition)



Scholarship programs to prepare students from underrepresented groups including those with disabilities for competitive biomedical PhD programs or advanced professional degrees through academic support and a stimulating research experience.