M.S. Degree Prospectus Guidelines
Department of Biological Sciences

The signature page should include all information on this page. A copy of the Prospectus Guidelines should be attached to the copy of the Prospectus when it is circulated for signatures.

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CALIFORNIA STATE UNIVERSITY, LOS ANGELES

DEPARTMENT OF BIOLOGICAL SCIENCES
MS DEGREE IN BIOLOGY GRADUATE RESEARCH PROSPECTUS

TITLE

Each of the undersigned affirms that he/she has found this Prospectus to be in accord with the attached Prospectus Guidelines.

Name _____ Signature _____

SID _____ Phone _____

Research Advisor _____ Signature _____

(If applicable) Off-campus research dept/phone_____

Committee Member _____ Signature _____

Committee Member _____ Signature _____

Date Prospectus Approved by the Department _____

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Procedures, Deadlines and Approval Process:

Your thesis prospectus will be reviewed at three levels:

1) by your primary thesis advisor
2) by your entire thesis committee
3) by the department's Graduate Affairs Committee (GAC)

This review process will deepen your critical thinking about your work and how your research fits into the "big picture" of your field. It will help you to clarify your ideas and improve your scientific writing by introducing you to peer review, the process by which scientific findings are evaluated by other researchers.

• **Step 1 – Communication.** Remind your primary thesis advisor during your first spring semester that you will be enrolling in BIOL 5200, and will be regularly seeking advisor feedback on the components of your draft prospectus for this course. Expect to make numerous revisions on each part of the prospectus as you work with your advisor to define the scope of your project, synthesize the relevant literature, and master the style and nuance of scientific writing. You should also choose a thesis committee during this spring term if you have not done so already, with input from your research advisor.

• **Step 2 – Writing and preliminary revisions.** Your primary thesis advisor will work with you until the Prospectus is ready to be reviewed by your other committee members. The Thesis Advisor is charged with ensuring that the scientific reasoning is sound, the Prospectus is organized according to the Prospectus Guidelines and the writing is clear. *If you are doing your research with an advisor outside the Department of Biological Sciences, provide your advisor with a copy of these Prospectus Guidelines*.

• **Step 3 – Thesis Committee review.** After your advisor approves your prospectus, distribute it to your thesis committee **no later than August 1st** to allow your committee members sufficient time to review your prospectus and return their comments and corrections to you. Note that faculty are not on duty in the summer; you may revise your prospectus over the summer, but do not expect your committee to provide comments earlier than August 1st unless you have asked and they have so agreed by prior arrangement.

Your **thesis committee** members will carry out an in-depth evaluation including the scientific content, depth of student knowledge, organization, clarity of writing, and adherence to these guidelines. Your committee is also responsible for ensuring the project as described is appropriate in scope for a Master's project.

• **Step 4 – Committee review & revisions**. After receiving comments and corrections from the members of your thesis committee, you will then work on a revision in consultation with your primary thesis advisor. Using "track changes," revise your prospectus by addressing all concerns raised by your thesis committee. **Prior to** submitting the final revision to the department committee, you must include a "Response to committee members remarks" section at the end of your prospectus where you list the major comments made by your thesis committee members, and explain how and where (i.e., by referencing line numbers in the text) you addressed their concerns in your final prospectus revision. Include a justification for suggestions not followed, as

appropriate. This attachment should be at least 1-2 pages but may be longer as warranted (e.g. depending on the scope of revisions requested.)

• **Step 5** - **Department Graduate Affairs Committee (GAC) review**. Once your thesis committee and advisor have approved all of your revisions, have them sign the cover page. You can do this on a hard copy or electronically via DocuSign (for information on setting up a DocuSign request, see https://www.calstatela.edu/its/docusign). Once signed, submit your prospectus to the department office for review by GAC during that term. Submit your prospectus with "track changes" enabled, so the department committee can see your final changes made. Submission of a signed prospectus to the department is the expectation for enrollment in thesis units (BIOL 5990) for that semester, pending approval by the departmental committee. **The deadline for submission to the department is the 1st day of the Fall semester**. Plan accordingly so that you do not miss this deadline.

GAC will evaluate whether your prospectus (a) adheres to the guidelines; (b) includes the required section highlighting how committee member comments were addressed; and (c) has abstract and significance sections that are clearly written for a non-specialist audience, and are appropriate for the goals of the project. Do not be distressed if GAC requests corrections, clarifications or revisions of your prospectus! This is a normal part of the review process, and is designed to improve your skills in scientific communication. Something that may seem clear to you and your committee members may not make sense to a biologist outside of your immediate field, who may ask for additional clarification. Learning how to explain your work clearly to non-specialists is an important part of your development as a biologist.

• **Step 6** – **Post-GAC review.** Following review by GAC, the prospectus will be returned to you as either approved, conditionally approved, or not approved.

Once **approved,** you have completed the review process.

If **conditionally approved**, you have minor corrections or suggestions for improvement from the department committee. A revision should be prepared **in consultation** with your primary thesis advisor and must be submitted to the department office by the **end of the 12th week** of the semester, for review by GAC. Submitting a revision by this deadline is required to register for thesis units in the following semester!

If **not approved,** there are substantial concerns with formatting, written expression, or the response to thesis committee feedback. If this occurs, meet with your advisor and committee members to review the comments from GAC and discuss these concerns. You need to submit a revised prospectus that fully addresses any concerns raised at the department level by the **end of the 12th week** of the semester, and secure GAC approval of your prospectus before you can register for BIOL 5990 units again in a subsequent term.

Required Prospectus Components and Accompanying Guidelines:

General Considerations:

A. All text must be single-spaced in 12-point Times New Roman font.
B. Margins should be one inch on all sides.

I. Title

A. Convey the specific nature of the proposed study.
B. Format title so that:
    1. Only the first word and proper nouns are capitalized, or
    2. All words except articles, prepositions, and conjunctions are capitalized.

II. Non-specialist abstract *limit: 300 words*

A. Briefly convey the research to be conducted, including the rationale so that a non-specialist audience can understand what you will be doing.
B. Include a hypothesis or objective of the study, an overview of methods, and a brief statement of expected results and their significance.
C. Avoid acronyms, abbreviations, citations, and technical jargon specific to the field.

III. Objectives *limit: ½ page*

A. List specific hypotheses to be tested, expressed as statements.
B. If work will not test a hypothesis, clearly state the objective(s) to be met.

IV. Background *limit: 2 ½ pages*

A. Introduce the topic to a reader outside of the field.
B. Review the primary literature, summarizing the key information that is relevant to your proposed research.
    1. Synthesize information; do not simply list unconnected facts.
    2. Include relevant unpublished data (with citations) from your lab.
    3. Properly reference all published and unpublished work that you mention.
C. Briefly restate your objectives, explaining how objectives relate to earlier work covered in the literature review.

V. Overview of Study Design *limit: ½ page*

    1. Present the conceptual approach to the study.
    2. Summarize the general experimental design.

VI. Methods and Materials *limit: 1½ pages*

A. Describe experimental procedures to be used, measurements to be made, analyses to be performed and statistical tests to be applied.
    1. Explain the purpose of each experiment (topic sentences are useful). Do not just list "cookbook" steps; explain **why** you are doing a procedure.
    2. Explain treatments versus controls, where appropriate.
    3. Include enough detail for ***the reader*** to evaluate whether a given method is appropriate to address your objectives, such as sample sizes and the number of replicates. Where appropriate, state how long it may take you to complete major experiments or to process all of your samples.
B. Include sources of specialized reagents, samples or equipment as appropriate.
C. Include citations for published procedures, software, and statistical references.
D. If the proposed work involves animal or human subjects, state that you and your advisor will comply with all appropriate federal and institutional guidelines.

VII. Interpretation of Results: ***limit: ½ page***

A. If you are testing a hypothesis:
   1. Compare the alternative experimental outcomes that you expect if your hypothesis is supported versus refuted. Make appropriate comparisons to controls, and explain how the **statistical tests** given in the Methods will be used to evaluate a hypothesis – if a given test is significant, what will you conclude?
   2. Where possible, provide alternative explanations for unexpected results you might obtain (i.e., if your test is non-significant, why might that be?)
   3. It may be helpful to include a diagram or illustration of potential results or possible outcomes that you might obtain, and explain how you would interpret such data (e.g., which pattern would support vs. refute your hypothesis).

B. If your objective does not involve testing a hypothesis (for example, developing a new method or procedure):
   1. Explain what anticipated results will indicate the successful achievement of your objective(s).
   2. Where possible, anticipate and interpret alternative or unexpected results.

VIII. Significance: ***limit: ½ page***

A. In writing that a non-specialist can easily understand, explain how your proposed work will, in a broad sense:
   1. Fill gaps in current knowledge or improve upon current procedures.
   2. Contribute to the advancement of your field, benefit society, and/or lead to improvements in human or environmental health.
   3. Lay the foundation for future research.

IX. Timeline ***limit: ½ page***

A. Include information on when data collection will be completed; when data analyses will be completed; and when thesis writing and figure preparation will take place.

X. Budget ***limit: 1 page***

A. Itemize major expenses.

B. Specify the sources of funds to be used to cover these expenses.

XI. References ***No page limit***

A. List all citations mentioned in the text, in one of the following formats:
   1. In numerical order as mentioned in text; reference in text by number.
   2. In alphabetical order, by last name of the first author.
   3. In alphabetical order and enumerated, with numbers cited in the text.

B. **Follow one consistent format for all references**! Use the format followed by a leading journal in your particular discipline of biology. Be consistent!

XII. Figures and Tables (optional) ***No page limit***

A. Use figures, tables, or flowcharts where needed to illustrate complex ideas, designs and methods. This can help explain complicated experimental designs, intracellular pathways, geographical sampling locations, etc.

B. All figures and tables must include concise, explanatory legends or captions**. Table captions are presented above the table, while figure legends are presented below the figure**.

C. If you reproduce someone else's figure, you must include a citation in the legend indicating where this figure or schematic diagram came from. This citation needs

to be included in your References section. ***Note***: The MS thesis of former members of your lab should be cited like any other work, following the standard format for a dissertation.

XIII. Response to committee comments: *1-2 pages minimum*

A. Compile the list of comments you obtained from your thesis committee regarding your prospectus and address how you appropriately responded to those comments.
B. Example comments and responses:
    1. Committee member X asked "*Why did you choose to use YYY method instead of ZZZ method*"
       Response: We carefully considered both methods and while ZZZ method would likely yield a more comprehensive understanding of the mechanisms involved, we decided upon the YYY method due to budgetary and time restrictions.
    2. Committee member X asked "*Please ensure that all your references are formatted consistently and correctly*"
       Response: All references were formatted to be consistent and now follow the AMA referencing format

NOTE: You are expected to work at least 10 hours per week for each unit of BIOL 5990 for which you register. You can take a maximum of 3 units of BIOL 5990 in any one semester. It will therefore take you at least 2 semesters of BIOL 5990 enrollment to graduate. Do not try to register for all 6 units of 5990 in one semester!