

**BISC 494**  
**Biology Honors Thesis**  
**Units: 2**  
**Spring 2022, Wed, Time: 12-12:50PM**  
**Section 13494D**

**Location:** RRI (Ray R. Irani Hall), room 221

**Instructor:** John Tower, PhD  
**Office:** RRI 219C  
**Office Hours:** Wed 10-11:50  
**Contact Info:** Email (preferred method for contact)  
[jtower@usc.edu](mailto:jtower@usc.edu)  
Emails typically returned within 48hrs.  
Phone 213-740-5384

**Course Description**

The goal of this course is to support, stimulate and evaluate the honors student writing their thesis. BISC494 students are expected to participate in the weekly honors seminar as a means of maintaining communication between the thesis student and the faculty and other honors students, and to provide leadership and mentoring by asking questions and exchanging ideas about the oral presentations made by BISC493 students.

**Learning Objectives**

Students are expected to gain practical experience in writing a thesis, including background research, as well as gain experience in giving a presentation of their thesis.

**Prerequisites:** BISC 493

**Course Notes**

Copies of presentation schedules and other class information will be posted on Blackboard.

**Required Readings and Supplementary Materials**

Required readings for this course are background reading and research for the thesis. Any supplementary class materials will be posted on Blackboard.

Examples of previous Honors thesis are posted on Blackboard for reference.

**Description and Assessment of Assignments**

Class participation (15%): is based on asking questions and participating in discussion during presentations. Thesis Outline (10%): will be graded on submission by due date, clarity and organization. Final written thesis (45%): will be graded based on Introduction/literature review, Methods, Results, Discussion, and Future Directions. Final exam (30%): students will present their Thesis to the class during the regular final exam period. Presentations will be graded based on clarity of presentation, including content and clarity of slides, and ability of student to answer questions from the class.

## Grading Breakdown

<u>Assignment</u>	<u>Points</u>	<u>% of Grade</u>
<b>Class participation</b>	<b>15</b>	<b>15</b>
<b>Thesis outline</b>	<b>10</b>	<b>10</b>
<b>Final thesis</b>	<b>45</b>	<b>45</b>
<b>Thesis presentation</b>	<b>30</b>	<b>30</b>
<b>Total</b>	<b>100</b>	<b>100</b>

## Grading Scale (Example)

Course final grades will be determined using the following scale

A	95-100
A-	90-94
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	59 and below

## Assignment Submission Policy

Thesis outline, thesis updates and final written Thesis must be submitted to the instructors via email by the due dates below.

## Grading Timeline

Grades for Thesis outline and Thesis updates will be available on Blackboard by the next class meeting.

## Additional Policies

Attendance at each class is expected. Missed classes will result in loss of class participation points for that class meeting.

## Course Schedule: A Weekly Breakdown

	Topics/Daily Activities	Readings and Homework	Deliverable/ Due Dates
<b>Week 1</b> <b>Jan 12</b>	<b>Prepare draft thesis outline</b>	Name and email of Mentor due by class time	Name and email of Mentor due by class time
<b>Week 2</b> <b>Jan 19</b>	<b>Prepare draft thesis outline</b>	None	<b>None</b>
<b>Week 3</b> <b>Jan 26</b>	<b>Prepare draft thesis outline</b>	None	None
<b>Week 4</b> <b>Feb 2</b>	<b>Meet with committee to review draft thesis outline</b>	Meet with committee in either week 4 or week 5 (this can be via email)	None
<b>Week 5</b> <b>Feb 9</b>	<b>Meet with committee to review draft thesis outline</b>	Meet with committee in either week 4 or week 5 (this can be via email)	None
<b>Week 6</b> <b>Feb 16</b>	<b>Thesis outline due Wed before class</b>	Thesis outline must include list of Tables and Figures, and be approved by Mentor	Thesis outline due by before class time Wed week 6
<b>Week 7</b> <b>Feb 23</b>	<b>Prepare thesis</b>	None	None
<b>Week 8</b> <b>Mar 2</b>	<b>Prepare thesis</b>	Draft of Methods, Results, Figures and Tables due	Draft of Methods, Results, Figures and Tables due by class time Week 8
<b>Week 9</b> <b>Mar 9</b>	<b>Prepare thesis</b>	None	None
<b>Week 10</b> <b>Mar 16</b>	<b>*Spring Break*</b>	None	None

<b>Week 11</b> Mar 23	<b>Draft of thesis due Wed</b>	Draft of thesis due	Draft of entire Thesis due by class time Wed Week 11
<b>Week 12</b> Mar 30	<b>Meet with committee to review draft</b>	Meet with committee to review draft (this can be via email)	None
<b>Week 13</b> April 7	<b>Revise draft per committee comments</b>	None	None
<b>Week 14</b> April 14	<b>Final draft of thesis due Wed</b>	Final draft of thesis due	Final draft of thesis due by class time Wed week 14
<b>Week 15</b> April 21	<b>Final thesis due Wed</b>	None	Final thesis due by class time Wed week 16
<b>Week 16</b> April 28	<b>Prepare for presentations</b>	None	None
	<b>Final exam</b>	Students will give oral/slide presentation of thesis research to class for grade	(For the date and time of the final for this class, consult the USC <i>Schedule of Classes</i> at <a href="http://classes.usc.edu">classes.usc.edu</a> .)

**THESIS CONTENT (please see example theses posted on BlackBoard):**

**Title**

**Abstract**

**Introduction** – including literature review and hypothesis being tested – explain what was known before your study and the rationale for undertaking your experiments

**Materials and methods**

**Results** – including Figures and Tables

**Discussion** – discuss how your results relate to other studies, how your results have advanced the field, any limitations to your study, future directions

**References**

## Helpful Hints for Oral Defense Presentations in BISC 494

Plan on giving a PowerPoint presentation lasting ~20 minutes, so there will be plenty of time for questions. Start by introducing yourself and giving your title and the name of your advisor.

1. Keep your mind on the big picture! Remember to give an overview at the beginning. Give a brief introduction to the topic, including why the question being investigated is interesting and important. This will help to pique the interest of your listeners at the start.
2. Aim for a crisp, well-organized, succinct presentation. Include: Introduction/background/hypothesis. Methods. Results. Conclusions. Future directions for the research.
3. Frequently, speakers forget that people in the audience don't know much about the topic. Unless you are presenting a talk at a specialized scientific conference, you should remember that you're explaining complicated material to people who don't already know much about it. Put yourself in the listeners' place and try to anticipate what will confuse them.
4. Give at least 1 practice talk at least 1 day before your class presentation. If possible, practice in the same room where you will be presenting your talk. Since you'll be using PowerPoint, it is important that you rehearse and work out any technical difficulties. We have created a forum for you to practice being professional, so please take advantage of it.
5. Try not to read extensively from notes or to spend lots of time looking down; people will be a lot more interested if you look up and make eye contact with the audience.
6. Remember to take a giant step BACK at the end of your presentation and return to the big picture. Ask yourself: what is the main take-home message I want to convey?
7. It's a performance! Even if you don't feel particularly energetic and confident, you have to ACT AS IF YOU ARE, just for 30 minutes.
8. Try not to say "um" or "like" or "basically" multiple times during your talk. If you fall into the habit of repeating such words, it can be a difficult habit to break. It is very distracting to the audience to hear multiple repetitions of a single word, especially one that has little or no informational content.
9. The better you are at giving your 494 thesis presentation, the better you'll be at communicating in general, so this is great practice! No matter what your career goals, the ability to communicate verbally, in both formal and informal settings, will be an important skill for your professional success. Good luck, and have fun!

### Writing Tips

- Include page numbers, even in your drafts.
- Standard abbreviations don't have to be defined and should be used throughout: 37°C; min for minute or minutes; h or hr for hour or hours; s or sec for second or seconds; µL or µl, mL or ml; M for molar; DNA; bp; kb; Da for dalton.
- A non-standard abbreviation must be introduced in parentheses on its first occurrence [e.g., "Wells were washed with phosphate-buffered saline (PBS)."] After the abbreviation has been introduced, it then must be used thereafter [e.g., "Samples were diluted with PBS."].
- An acronym is often composed of capital letters, but the spelled-out phrase does not contain capital letters, except for words that are always capitalized.  
RIGHT: based on fluorescence resonance energy transfer (FRET)  
WRONG: based on Fluorescence Resonance Energy Transfer (FRET)

**RIGHT:** in the C-terminal domain (CTD) of RNA polymerase (RNAP)

- # is not a standard (publishable) abbreviation for “number.” Use “no.” or spell out “number,” especially if you have room for it anyway.
- Use Greek letters where appropriate. Don’t spell out the Greek letter (use  $\mu$ , not mu). Don’t use u instead of  $\mu$
- Use correct chemical notation, including subscripts and superscripts:  $\text{H}_2\text{O}$ ,  $\text{Mg}^{2+}$  (not  $\text{Mg}^{++}$  or  $\text{Mg}+2$ ).
- Italicize the names of restriction enzymes and scientific names of organisms. You don’t have to italicize *in vivo*, *in vitro*, e.g., i.e., or *et al.*
- Italicize genes and genotypes, but not proteins or phenotypes.
- Put a space between a numerical value and the unit of measure: 2 mM, 10 min, 125 bp. However, if you are creating an adjective, put a hyphen between the numerical value and the unit of measure: “... 2 ml of culture in a 5-ml tube.”
- You don’t have to double space within a table, but the rest of the thesis should be double-spaced.
- A table should not have empty boxes. Use “Merge cells” to remove unwanted grid lines.
- Every column in a table has a heading that applies to all of the entries in that column.
- If a table presents the results of an experiment, it is customary to use the leftmost column for the independent variable. The dependent variable goes in column(s) further to the right.
- Don’t let a page break fall within a table.
- For titles and table headings, choose a capitalization rule and stick to it throughout your thesis. The two most common rules are: (i) capitalize only the first word and proper nouns; and (ii) capitalize nouns, verbs, pronouns, adjectives and adverbs, but not articles, prepositions or abbreviations that should not be capitalized (mtDNA, tRNA).
- Don’t capitalize chemical or biochemical words such as guanine, sodium acetate, buffer, immunoglobulin, nuclease, or polymerase. This does not apply to defined abbreviations, such as IgG, RNase A, DNA, Buffer Q, or PolB.
- In American English, a comma or period comes before the end-quote symbol. All other punctuation follows the end-quote symbol. For examples, see any issue of The New York Times, Los Angeles Times, or People magazine.
- Use American, not British spelling (e.g., color, not colour).
- Judicious use of color and shading can enhance clarity and understanding. However, color and shading are not helpful when they make it difficult to read the words. If you use color in your document, print it with a color printer.
- Don’t write a sentence that, standing on its own, is false.

## Statement on Academic Conduct and Support Systems

### Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” [policy.usc.edu/scampus-part-b](http://policy.usc.edu/scampus-part-b). Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, [policy.usc.edu/scientific-misconduct](http://policy.usc.edu/scientific-misconduct).

## **Support Systems:**

*Student Health Counseling Services - (213) 740-7711 – 24/7 on call*

[engemannshc.usc.edu/counseling](http://engemannshc.usc.edu/counseling)

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

*National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call*

[suicidepreventionlifeline.org](http://suicidepreventionlifeline.org)

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

*Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 – 24/7 on call*

[engemannshc.usc.edu/rsvp](http://engemannshc.usc.edu/rsvp)

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

*Office of Equity and Diversity (OED) | Title IX - (213) 740-5086*

[equity.usc.edu](http://equity.usc.edu), [titleix.usc.edu](http://titleix.usc.edu)

Information about how to get help or help a survivor of harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations.

*Bias Assessment Response and Support - (213) 740-2421*

[studentaffairs.usc.edu/bias-assessment-response-support](http://studentaffairs.usc.edu/bias-assessment-response-support)

Avenue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation and response.

*The Office of Disability Services and Programs - (213) 740-0776*

[dsp.usc.edu](http://dsp.usc.edu)

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

*USC Support and Advocacy - (213) 821-4710*

[studentaffairs.usc.edu/ssa](http://studentaffairs.usc.edu/ssa)

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.



*Diversity at USC - (213) 740-2101*

[diversity.usc.edu](http://diversity.usc.edu)

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

*USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call*

[dps.usc.edu](http://dps.usc.edu), [emergency.usc.edu](http://emergency.usc.edu)

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

*USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call*

[dps.usc.edu](http://dps.usc.edu)

Non-emergency assistance or information.