General Education Foundations of Scientific Inquiry (FSI) Course Information Sheet

Please submit this sheet for each proposed course along with 1) a syllabus describing the key components of the course that will be taught regardless of the instructor and 2) assignment guidelines.

The GE FSI Assessment Project Resource Team would be delighted to meet with you to assist in filling out this form. Please contact RRamachandran@teaching.ucla.edu if you wish to arrange a meeting.

Department, Course Number, and Title *EE BIOL 98T: The History and Racism of Biology Research: Moving towards an Anti-Racist Science Future*

Indicate when the department anticipates offering this course in 2019-20 and give anticipated enrollment:

Fall: Enrollment ____ Winter: Enrollment X Spring: Enrollment ____ Summer: Enrollment _____

As stated in the guidelines regarding courses in the Foundations of Scientific Inquiry (FSI), the aim of these course offerings is:

To ensure that students gain a fundamental understanding of how scientists formulate and answer questions about the operation of both the physical and biological world. These courses also deal with some of the most important issues, developments, and methodologies in contemporary science and technology, addressing such topics as the origin of the universe, environmental degradation, and the decoding of the human genome. Through lectures, experiential learning opportunities such as laboratories, writing, and intensive discussions students consider the important roles played by the laws of physics and chemistry in society, biology, earth and environmental sciences, and astrophysics and cosmology.

General Guidelines for GE FSI Courses: GE Courses may be upper or lower division, but they should have no prerequisites. Any student should be able to take them and understand the material with the background expected from all UCLA students. While the course may include material related to the history of science and the social and cultural implications of scientific research, **at least half** of the course should be devoted to students actively engaging in the scientific process of inquiry, analysis, problem-solving, and quantitative reasoning (Goal #1).

Please indicate the area/s which you believe this course should satisfy.

Life Science: [X] Physical Science: [ ] Life Science Lab*: [ ] Physical Science Lab*: [ ]

**Courses approved as GE FSI Labs must complete the additional student learning outcomes for labs given in Page 4.*

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General Education FSI Student Goals: Courses fulfilling the GE FSI requirement will provide a minimum of four units and should align with some (not necessarily all) of the following seven general goals:

1. Students will actively engage in the scientific process of inquiry, analysis, problem-solving, and quantitative reasoning.
2. Students will acquire an informed appreciation of scientists, scientific research, and technology.
3. Students will experience the interdisciplinary nature of science.
4. Students will develop information literacy.
5. Students will make evidence-based decisions in a wide array of science and non-science contexts.
6. Students will develop scientific literacy by addressing current, critical issues and topics in science that are personally meaningful in daily life and/or connected to the needs of society.
7. Students will recognize fundamental scientific principles and the connections between different domains of science.

General Education FSI Student Learning Outcomes: Each course should have student learning outcomes listed in the syllabus. These outcomes may be tied to a specific discipline but should be associated with the seven broad categories listed above (please see **Appendix I** for a sample list of possible learning outcomes supporting each goal).

Please identify measurable learning outcomes from your course and enter them in the first column of Table 1. You may add more rows as needed. Next, indicate how your learning outcomes relate to the GE FSI learning goals (above), by placing X's in the appropriate boxes. Note that all GE FSI courses must address Goal #1.

Table 1: Alignment of Course Learning Outcomes with GE FSI Learning Goals

	Your Course Learning Outcomes	Select GE FSI Goal #						
		1	2	3	4	5	6	7
1	Identify and understand the general components of the scientific process for different biology subdisciplines (e.g., genetics, ecology, evolution, etc.)	X	X	X				X
2	Analyze and critique any limitations, gaps, etc. of biology and education research and editorials	X	X	X		X	X	X
3	Develop and improve on science communication and literacy through presentations and writing assignments	X	X	X	X	X	X	X
4	Compare and contrast interdisciplinary biology and education research and how different resources inform or differ from one another	X	X	X		X	X	X
5	Develop a working understanding of racism and how it persists in biology research		X	X	X		X	X
6	Understand the general history of any respective biology subdiscipline and how that subdiscipline was able to be discovered and develop during its time period		X	X	X	X	X	X
7	Analyze and critique how racism is related to the innovation of any respective biology subdiscipline		X	X	X	X	X	X
8	Develop a greater understanding and social awareness of how racism impacts biology research		X	X			X	X

Table 2: Course Activities and Assignments that Support the Learning Goals

Course Activities	Course Assignments
How will progress towards meeting the learning outcomes be facilitated? In other words, what types of course activities will be provided to assist students in achieving the outcomes?	How will students in the course demonstrate their ability to meet the learning outcomes? Please describe and provide a sample assignment, such as a term paper, exam, essay prompt, etc.

I will implement active learning, inclusive teaching strategies, and anti-racist pedagogy to progress towards meeting the learning outcomes. Some activities will include journal reflections on reading assignments, facilitated group discussions to analyze and critique the limitations to the research, and small group lightning talks on scientific research papers.	Short reading quizzes will assess if students read the course material prior to class discussions and activities. Journal reflections will also be reviewed to track the retention and application of course material. A final personal essay assignment will also be scaffolded and graded to assess for overall impact and knowledge gained from the course material.

Please provide information on estimated weekly hours for the class.

A) STUDENT CONTACT PER WEEK (if not applicable write N/A)

Activity	Number of hours per week
Lecture	3
Discussion Section	N/A
Labs	N/A
Experiential (Community-engagement, internships, other	N/A
Field Trips	N/A
A) TOTAL student contact per week	3

B) OUT-OF-CLASS HOURS PER WEEK (if not applicable write N/A)

Activity	Number of hours per week
General Review and Preparation	N/A
Reading	5
Group Projects	3
Preparation for Quizzes & Exams	1
Information Literacy Exercises	N/A
Written Assignments	3
Research Activity	N/A
B) TOTAL Out-of-class time per week	12

GRAND TOTAL (A) + (B) must equal at least 15 hours/week: 15 (hours)

Additional Student Learning Outcomes for experiential learning courses approved as "GE FSI Labs"

GE FSI Lab Definition and Expectations: A hands-on laboratory, computer simulation, demonstration, or field experience that involves active participation in experimental observation, data generation and collection using the techniques, methodologies, and approaches of modern-day scientists. Any lab should be conducted under sufficient supervision by the instructor or a Teaching Assistant (TA). Furthermore, the instructor and TAs should meet regularly outside of class time (minimum weekly or biweekly) to practice performing the lab procedures and/or to review the experimental results.

Please put an "X" beside <u>one or more</u> of the following learning outcomes for your course (select all that apply):

	1. Students will design, implement, and evaluate an experimental strategy for answering scientific questions, testing a hypothesis, or solving a problem.
	2. When possible, students will replicate experiments to allow testing for and interpretation of statistical significance.
	3. Students will apply commonly used mathematical concepts and statistical methods (e.g., basic addition, subtraction, multiplication, division, averages, standard deviation, t-test for significance) in their analysis of different types of scientific data they collect.
	4. Students will be able to visually depict a quantitative dataset as a chart, graph, table, or mathematical equation.
	5. Students will be able to concisely summarize trends and patterns deduced from quantitative and qualitative data to make informed conclusions about their experimental results.
	6. When interpreting their results, students will distinguish between the most important and extraneous findings (i.e. identify those that are critical to addressing a question, solving a problem, or supporting/refuting a hypothesis).
	7. When interpreting their results, students will infer relationships between controls and experimental variables as well as assess causality and correlation among variables.
	8. Students will be able to troubleshoot experimental procedures or methods of analysis to develop a sound scientific rationale for deducing what went wrong and why.

Please present concise explanation of how your course satisfies these criteria.

How will students in this course actively experiment and engage in the hands-on process of gathering, analyzing, and interpreting data?

How will progress towards meeting the student learning outcomes for "labs" be measured/assessed?

In other words, what types of assignments will be given to determine whether students are achieving the learning outcomes?

Appendix I. Student Learning Goals with Nested Learning Outcomes for All General Education (GE) Foundations in Scientific Inquiry Courses

Course Goals (1-7) and Student Learning Outcomes (a, b, c, etc.) for all "GE FSI" courses:

1. Students will actively engage in the scientific process of inquiry, analysis, problem-solving, and quantitative reasoning.
    a. Students will explain how scientists answer scientific questions, test a hypothesis, or solve a problem.
    b. Students will make reasonable predictions of experimental outcomes based on observation, measurements, and/or prior knowledge surmised from the scientific literature or other reliable, validated, accurate information sources.
    c. Students will break down, reason through, and solve complex quantitative problem sets.
    d. Students will be confident working with numerical data.
    e. Students will estimate and complete calculations to solve a quantitative problem.
    f. Students will recognize different objects and apply units of measurement at relevant scales (quantity, size, time) and orders of magnitude.

2. Students will acquire an informed appreciation of scientists, scientific research, and technology.
    a. Students will value their academic experiences in a science course that is outside their primary field of study.
    b. Students will recognize the benefits of science to society or their everyday life.
    c. Students will express interest in contributing to the sciences (e.g., engaging in research or scientific discourse with others).
    d. Non-science students will see scientists as role models, helping them to identify as scientists themselves.

3. Students will experience the interdisciplinary nature of science.
    a. Students will investigate topics from a variety of scientific fields.
    b. Students will explore the perspectives of multiple diverse scientists.
    c. Students will make logical connections between key concepts from multiple scientific disciplines.

4. Students will develop information literacy.
    a. Students will be mindful of information they encounter, recognizing contexts or situations when it is necessary to seek out other sources or data.
    b. Students will identify, locate, and critically evaluate information sources and datasets to ensure they are reliable, validated, accurate, and scholarly (i.e. associated with citations in peer-reviewed, public research studies).
    c. Students will explain the peer-review process in science and its role in critical evaluation and validation of published, scientific findings.

5. Students will make evidence-based decisions in a wide array of science and non-science contexts.
    a. Students will distinguish between opinion and fact (i.e. recognize data-supported conclusions).
    b. Students will use reliable, validated, accurate, and scholarly information sources and datasets before accepting or formulating a conclusion.
    c. Students will draw conclusions or make judgements about experimental results informed by critical thinking, that is, a comprehensive exploration of ideas and systematic engagement with the scientific process.

6. Students will develop scientific literacy by addressing current, critical issues and topics in science that are personally meaningful in daily life and/or connected to the needs of society (e.g., climate change, vaccination, GMOs, evolution).
    a. Students will clearly state the significance or relevance of a research question or problem (i.e. state why scientists are motivated to study the issue or topic).
    b. Students will discuss societal impacts by citing examples of the ways in which scientists and scientific research contribute to society.
    c. Students will describe the interactions between humans and their physical world and the positive and negative effects of this interaction.
    d. Students will explain why issues perceived as "controversial" in the public domain are not considered "controversial" in among scientists.

7. Students will recognize fundamental scientific principles and the connections between different domains of science.
    a. Students will describe the nature, organization, and evolution of living systems.
    b. Students will explain the origin and physical processes of the planet earth and the surrounding universe.
    c. Students will differentiate between a scientific theory, hypothesis, fact, or law.

General Education Foundations of Society and Culture (SC) Course Information Sheet

Please submit this sheet for each proposed course along with 1) a syllabus describing the key components of the course that will be taught regardless of the instructor and 2) assignment guidelines.

Department, Course Number, and Title EE BIOL 98T - The History and Racism of Biology Research: Working towards an Anti-Racist Science Future

The aim of the GE SC course offerings is:
The aim of courses in this area is to introduce students to the ways in which humans organize, structure, rationalize, and govern their diverse societies and cultures over time. These courses focus on a particular historical question, societal problem, or topic of political and economic concern in an effort to demonstrate to students how issues are objectified for study, how data is collected and analyzed, and how new understandings of social phenomena are achieved and evaluated.

General Education SC Student Learning Goals: Courses fulfilling SC will provide a minimum of five units and should align with *each* of the following four learning goals (see Appendix):

1. Students will learn about varying historical, social, cultural, political, and economic processes that shape and are shaped by human interaction.
2. Students will learn how to analyze sources and data.
3. Students will engage in critical interpretation and reasoning.
4. Students will communicate effectively.

General Education SC Student Learning Outcomes: Each course should have student learning outcomes listed in the syllabus. These learning outcomes may be tied to a specific discipline but should be associated with each of the *four* broad learning goals listed above (please see **Appendix I: Society & Culture Learning Outcomes** for a sample list of possible learning outcomes supporting each goal).

General Guidelines for GE SC Courses:

- Introductory Courses: An "introductory" class offered for GE by a department or an IDP should introduce students to the discipline's methodologies or "ways of knowing."
- Upper Division Courses: Most GE Courses are lower division courses in order to be accessible to any student, including first-year students. While GE courses may be upper division, they should have no prerequisites and students should be able to take them and understand the material with the background expected from all UCLA students.
- Writing Assignments: GE courses within the Society & Culture foundations should contain a significant writing component.
- Unit guidelines: GE courses within Society & Culture are all at least 5-units.

Please indicate the area/s which you believe this course should satisfy. Please note, while you can request review for multiple subcategories across Foundation Areas, GEs are not typically approved for more than 2 subcategories.

- ☐ Historical Analysis
- ☐ Social Analysis

Briefly describe the rationale for assignment to SC foundation area and subgroup(s) chosen.

This seminar will explore scientific papers on different biology research disciplines (e.g., genetics, microbiology, evolution, etc.) that will be coupled with education research/editorials to provide at least one perspective on the racist and/or excluded history of that respective discipline. The goal of this seminar is be interdisciplinary by teaching students the foundations of different biology research and how to critique it, while learning the history of that research through an anti-racist lens. I will be implementing anti-racist pedagogy in addition to active learning and inclusive teaching strategies.

Indicate when the department anticipates offering this course in 2020-22 and give anticipated enrollment:

2020-21
- ❑ Fall: Enrollment _____
- ❑ Winter: Enrollment _____
- ❑ Spring: Enrollment _____
- ❑ Summer: Enrollment ____

2021-22
- ❑ Fall: Enrollment _____
- ■ Winter: Enrollment 18
- ❑ Spring: Enrollment _____
- ❑ Summer: Enrollment _____

Please provide information on estimated weekly hours for the class.

A) STUDENT CONTACT PER WEEK (if not applicable write N/A)

Activity	Number of hours per week
Lecture	3
Discussion Section	N/A
Labs	N/A
Experiential (Community-engagement, internships, other	N/A
Field Trips	N/A
A) TOTAL student contact per week	3

B) OUT-OF-CLASS HOURS PER WEEK (if not applicable write N/A)

Activity	Number of hours per week
General Review and Preparation	N/A
Reading	5
Group Projects	3
Preparation for Quizzes & Exams	1
Information Literacy Exercises	N/A
Written Assignments	3
Research Activity	N/A
B) TOTAL Out-of-class time per week	12

GRAND TOTAL (A) + (B) must equal 15 hours/week: 15 _____ (hours)

Please note that if you're teaching a summer course, the aggregated hours should equal 150. For instance, if you're teaching a 5 week course, your total out-of class and in-class time per week should equal 30 hours.

Please present a concise explanation for the following:

How does your course address each of the four learning goals?	Through lectures and reading assignments, students will learn about the history and racism of different biology disciplines. Through facilitated group discussions and writing assignments, students will reflect and analyze the limitations to biology research and how historical/social aspects of racism and racial exclusion are related to science discovery.
Please provide a sample assignment, term paper/exam, essay prompt, or other form of assessment that speak to these learning goals.	A Personal Essay assignment will allow students to demonstrate their knowledge of and experience with how racism relates to science discovery. Students will be required to cite scientific and education literature as well as class discussions. The Personal Essay will be scaffolded with an optional detailed outline, preliminary draft, peer review of the preliminary draft, and weekly journal reflections.
What class activities (e.g. homework, papers, blog posts, projects, etc.) will involve writing? How will the writing be evaluated?	Writing assignments will include journal reflections, personal essay draft, a final personal essay, and an optional detailed essay outline for extra credit. Instructor will provide feedback on outlines. The draft will be peer reviewed by two classmates who will each complete a peer review form, designed by the instructor, to provide feedback. The final essay will be assessed for the level of detail that students anecdote their experiences and their examples of how racism relates to biology research.
If the course is an upper division course (100-199), please discuss how the course will be accessible to all UCLA students, including first-years?	

APPENDIX I

Student Learning Goals with Nested Learning Outcomes for
all General Education (GE) Foundations in Society and Culture (SC) Courses

Course Goals (1-4) and samples of possible Student Learning Outcomes (a, b, c, etc.) for all "GE SC" courses:

1. **Students will learn about varying historical, social, cultural, political, and economic processes that shape and are shaped by human interaction.**
    a. Students will be able to identify how culture develops and changes over time and explore the multi-dimensionality of culture.
    b. Students will understand how diverse societies are structured and organized and recognize internal and external differences both within and across societies.
    c. Students will analyze historical development and change with an emphasis on understanding the causes and consequences of these changes.
    d. Students will consider how different disciplines examine society and culture, including their principal theoretical and methodological approaches.

2. **Students will learn how to analyze sources and data.**
    a. Students will learn to identify and use different types of primary and secondary sources.
    b. Students will engage actively in the social-scientific processes of inquiry, analysis, and problem-solving, as well as quantitative and qualitative research and data collection.
    c. Students will evaluate sources and data for their positionality, significance, reliability, and validity.

3. **Students will engage in critical interpretation and reasoning.**
    a. Students will evaluate and develop arguments informed by evidence.
    b. Students will gain critical reading skills, including media literacy.
    c. Students will reflect on how history and the social sciences have been used, and can be used, to inform positive or negative social change.

4. **Students will communicate effectively.**
    a. Students will develop the ability to summarize, synthesize, and analyze scholarly literature.
    b. Students will practice writing clearly in appropriate/relevant disciplinary styles and marshal evidence in support of an argument.
    c. Students will learn how to communicate with non-expert audiences.

EE BIOL 98T
The History and Racism of Biology Research: Working towards an Anti-Racist Science Future

Course Instructor:

Benjamin A. Hà
PhD Candidate, Ecology and Evolutionary Biology
benjamin.ha@ucla.edu
Office Hours: TBD
Office Hours Zoom Link: TBD

Seminar Schedule:

Tuesday/Thursday, time TBD (each seminar 1.5 hours)

GE Credit Acknowledgment:

Upon successful completion of this course, students will satisfy two General Education requirements in two foundation areas: 1) Foundations of Scientific Inquiry and 2) Society and Culture Foundation Area.

Course Description:

This seminar has two primary learning objectives: 1) to discuss and critique current biology research papers and 2) to learn about the racist history and racial exclusion of different biology subdisciplines (e.g., genetics, ecology, evolution, etc.). We will first dissect the structure of a biology research paper, including background, results, and discussion. Secondly, we will analyze and critique the limitations, gaps, etc. in the research design and data. We will then discuss how racialized logic and/or racial exclusion and erasure are imbued in the discovery and development of that respective biology subdiscipline. To do this, our analysis will dive into the historical social contexts during which those subdisciplines developed.

To unpack the racist histories of biology research, this course aims to apply perspectives from education and ethnic studies scholarship to a traditional science journal club. The seminar will combine active learning (e.g., facilitated group discussions, lightning talks, minute papers, etc.), inclusive teaching strategies, and anti-racist pedagogy to provide a welcoming and open environment for all participants, including the instructor, to tackle challenging topics regarding racism and racial inequities in biology research. Some aspects

of intersectionality with regard to race/ethnicity, such as gender and socioeconomic status, will also be explored.

Course Objectives:

Students will be able to:

- Identify and understand the general components of the scientific process for different biology subdisciplines (e.g., genetics, ecology, evolution, etc.)
- Analyze and critique any limitations, gaps, etc. of biology and education research and editorials
- Develop and improve on science communication and literacy through presentations and writing assignments
- Compare and contrast interdisciplinary biology and education research and how different resources inform or differ from one another
- Develop a working understanding of racism and how it persists in biology research
- Understand the general history of any respective biology subdiscipline and how that subdiscipline was able to be discovered and develop during its time period
- Analyze and critique how racism is related to the history and innovation of any respective biology subdiscipline
- Develop a greater understanding and social awareness of how racism impacts biology research

Absences and Late/Missing Assignments:

Each student is allowed one unexcused absence - no questions asked, no need to contact the instructor. For any additional absences, students must contact the instructor with a justification for the absence and how to make it up for credit given that participation contributes to most of the course grade (see Grading Breakdown).

Each student is allowed to miss one journal reflection and drop the lowest quiz score - no questions asked, no need to contact the instructor. For late assignments, students must contact the instructor with a justification for the late submission. The instructor reserves the right to deduct points for late assignments. See table on Assignment Descriptions for more details.

How to Complete/Submit Assignments:

Google Drive: Each of you will have an individual Google drive folder that will only be accessed by me. You will use this to submit the following assignments:

- Journal reflections

- Optional Extra Credit: Detailed outline of Personal Essay
- Personal Essay draft
- Peer review of Personal Essay draft
- Final Personal Essay

CCLE: All other assignments will be submitted via CCLE (e.g., signed community agreement, syllabus quiz, short reading quizzes, uploaded PowerPoint for lightning talks).

COVID-19 Emergency Plan:

Full disclosure: I am fully vaccinated and live by myself, but I do occasionally interact with other people without wearing masks, which includes my vaccinated family/friends as well as with acquaintances or strangers whose statuses are unknown. There may be a COVID situation either in my or your social circles. Because of this, we need to have an emergency plan in place.

If I cannot make it to class in-person, then we may switch to a zoom seminar. The time/date will be the same as when we normally meet and the zoom link will be the same as my office hours (see Course Instructor section at top of syllabus). I will try my best to make this announcement as far in advance as possible.

If you cannot make it to class, email me immediately. There will be no penalty for missing attendance. I want you to be safe and healthy for as long as you can be! The both of us can coordinate/compromise for assignments, as needed.

For this class, we will also establish a buddy system. On the first day of class, I will ask you to exchange your contact information with at least one other classmate. If you have a COVID-related emergency for this class, please contact your buddy in addition to me.

Class Resources:

Given the nature of the course content, we will be having hard conversations that will likely be emotionally taxing, especially for those who directly experience or have experienced racism and other forms of discrimination. At the end of every seminar, I will invite you to complete an anonymous survey to report any feelings/thoughts you experience that you wish to report to me following any given seminar. Please feel free to be honest! I will review all responses prior to the following seminar.

>>> INCLUDE LINK TO ANONYMOUS SURVEY <<<

Remember that we learn through our discomfort (e.g., feeling vulnerable or emotional before/during/after these conversations), but discomfort is NOT to be confounded with feelings from being attacked due to racism or other forms of discrimination. Racism and discrimination - especially in this class - will not be tolerated.

Other resources:

- **UCLA CAPS (Counseling and Psychological Services)**: 310.825.0768
- **For urgent mental health issues for UCLA students**, call 310.825.0768 during the Triage Assessment hours (Monday-Thursday 9am-4pm and Fridays 9am-3pm). Some examples of urgent mental health issues are when students:
    - are thinking about harming themselves or others
    - are seriously concerned about another student's safety or well-being
    - feel unable to function, e.g. get out of bed, eat, shower
    - have experienced a recent traumatic event
- **National Suicide Prevention Hotline** (24 hours): (800) 273-TALK (8255) or chat online
- **Crisis Text Line** (24 hours): Text 741-741 from anywhere in the USA, anytime, about any type of crisis
- **Ronald Reagan UCLA Medical Center**: Main Line: 310.825.9111; Emergency Department: 310.825.2111

Grading Breakdown:

Assignment	Total # of Assignments	Points per Assignment	Total Points	% of Total Grade
Syllabus Quiz	1	15	15	5%
Participation - Attendance	20	1.5	30	30%
Participation - Journal Reflections	20	1.5	30	
Participation - Participating during class discussions	20	1.5	30	
Lightning Talks	2	15	30	10%
Short Reading Quizzes	10	3	30	10%
Personal Essay Draft (due week 8)	1	45	45	15%
Peer Review of Personal Essay Draft (due week 9)	2	22.5	45	15%
Final Personal Essay (deadline TBD)	1	45	45	15%
<u>Optional Extra Credit</u>: Detailed outline of Personal Essay (due week 7)	*1*	*6*	*6*	*+3%*
		Total	**300**	**100%**
		Total (with EC)	*306*	*106%*

Assignment Type	Frequency	Deadline	Description
Journal Reflections	Two per week	Pre-lecture: Before you attend the first seminar Post-lecture: After the second seminar by the end of Saturday	At the beginning and end of the week (before the first lecture and after the second lecture for the week), you are to write a 0.5-1 page (single spaced, Times New Roman, 1" margins) journal reflection. Refer to the template Journal Reflection Form The pre-lecture reflection is for you to summarize the content as well as your general thoughts on the assigned readings. The post-lecture reflection is for you to summarize what you learned/experienced in class, how it relates to any of the assigned readings for that seminar that week, etc. You should have 2 entries each week. Do not fall behind on any of these! Students are allowed to miss one journal reflection - no questions asked. Grading will be part of participation points, and based on completion and the level of depth in which you go into detail regarding your reflection. The more work or detail you include in your journal reflections, the more it can help you with composing your final Personal Essay assignment.
Short Reading Quizzes	Once per week	Before seminar	These will be brief quizzes (~4-6 questions maximum; multiple choice and open-ended questions) to assess if you read the assigned papers. The quiz will either be about Tuesday or Thursday reading assignments before the start of the seminar. The lowest quiz score will be dropped. Reading the papers ahead of time is essential for us, as a class, to develop deeper and meaningful dialogue around the topics. Reading quizzes will be on CCLE before the first seminar.

Assignment Type	Frequency	Deadline	Description
Lightning Talks	Two throughout the quarter	Depends on when you sign up	Each person will present on two separate assigned scientific papers for the entire quarter. Presentations will be done in groups of 3-4. These will be 8 minute presentations to provide a brief summary (background and results/discussion) of the assigned scientific research paper. *Optional Bonus Points*: Incorporate some details on at least 1-2 methods and/or statistical analyses conducted in the paper. Total presentation time will be extended to 11 minutes, only if incorporating background on methods/stats. Grading will be based on accuracy of reporting/summarizing the paper, the level of depth in summary, proportion and distribution of individual responsibility, as well as staying within the time limit (8 minutes maximum or +3 minutes if incorporating background on methods/stats).
Optional Extra Credit: Detailed Outline of Personal Essay	Once	End of week 7, Friday at midnight	This is for extra credit and should be at least 1 page long (single spaced, Times New Roman, 1" margins). In bullet format, this will be an outline of what you would like to include in your final Personal Essay. It should focus on how you plan to organize/format your paper, the content you plan to include, and the papers/discussions you plan to cite. While this assignment is extra credit, this is your opportunity to receive feedback from me directly prior to composing your preliminary draft of your Personal Essay. The more details you include in your outline, the more feedback I can give you.

Assignment Type	Frequency	Deadline	Description
Draft of Personal Essay	Once	End of week 8, Friday at midnight	This should be at least 2 pages (double spaced, Times New Roman, 1" margins). For this assignment, you will receive feedback from your peers. See Peer Feedback and Final Personal Essay assignment sections below for more details on what they should entail.
Peer Feedback of Draft of Personal Essay	Two in total	End of week 9, Friday at midnight	You will be randomly assigned to provide feedback for two of your classmates' draft of their Personal Essay. Complete the Peer Feedback Form to give appropriate feedback. Remember: these are *personal* essays, so your classmate may be vulnerable in their writing. Please keep their confidentiality unless you received their permission to share their story with anyone in/outside class.
Final Personal Essay	Once	Flexible, can discuss with class. Otherwise, end of Wednesday at midnight of finals week. Can submit earlier if desired	This will be a 6-7 page paper (double spaced, Times New Roman, 1" margins). This is not your traditional academic paper in that you are not strictly writing a research paper. For this Personal Essay, you should still summarize and cite any of the assigned readings and/or seminar discussions throughout the quarter while exploring your personal thoughts and experiences that have been informed by the assigned readings/discussions. Be sure to use your journal reflections to help you organize and compose your Personal Essay. You are welcome to include any additional literature you find on your own so long as you include it in the works cited page. If you are feeling stuck, then a place to start may be to reflect on your past, present, and future in relation to the course content for this seminar. Your Personal Essay should also have a title. Feel free to be creative.

Week 1: Course Introduction and A General Discussion about Racism in STEM	
Day/Date	Tuesday, TBD
Theme	Course Overview and Introduction, and Fundamentals of Research
Pre-Class Assignments	• Pre-Class Survey
Post-Class Assignments	• Submit your *signed* course community agreement • Take syllabus quiz online (due end of Saturday) • Pre-lecture journal reflection due before start of Thursday seminar
Topics/Questions Covered	Course introduction and seminar structure. Create a course community agreement together. What is anti-racist pedagogy? Components of a published research paper. How to read a published research paper. How to find research articles.
Day/Date	Thursday, TBD
Theme	A General Discussion about Racism in STEM
Pre-Class Assignments	• Read editorial McIntosh 1989 "White Privilege: Unpacking the Invisible Knapsack" (read pages 1-4) • Read education research paper Bowleg 2021 "'The Master's Tools Will Never Dismantle the Master's House': Ten Critical Lessons for Black and Other Health Equity Researchers of Color" (10 pages) • Watch video Heather C. McGhee TED Talk "Racism has a cost for everyone" (14:21) • Review some #BlackintheIVORY tweets in PDF
Post-Class Assignments	• Post-lecture journal reflection due by the end of Saturday, midnight
Topics/Questions Covered	What is racism? Why does it have a cost for everyone? In what ways does racism affect STEM as a research discipline and in higher education? Why is it important to understand racism in relation to academia, this course, and/or within our individual lives?

Week 2: Human Anatomy/Physiology	
Day/Date	Tuesday, TBD
Theme	Human Anatomy/Physiology: Research and History
Pre-Class Assignments	• Read ***scientific*** paper: Scott et al 2001: "Human Skeletal Muscle Fiber Type Classifications" (6 pages) • *Optional reading*: Ghosh 2015 "Human cadaveric dissection: a historical account from ancient Greece to the modern era" (14 pages) • Pre-lecture journal reflection
Post-Class Assignments	• None
Topics/Questions Covered	What are the limitations of the research? How does the history of the development of studying human anatomy relate to the research paper? Institutionally, what allowed for human anatomy research to develop and progress? What information is missing about the history of this research? Whose voices have been included (and excluded) and why?
Day/Date	Thursday, TBD
Theme	Human Anatomy/Physiology: Anti-Racist Perspective
Pre-Class Assignments	• Read research paper Halperin 2007 "The Poor, the Black, and the Marginalized as the Source of Cadavers in United States Anatomical Education" (6 pages)
Post-Class Assignments	• Post-lecture journal reflection
Topics/Questions Covered	History of the malpractices of studying human anatomy. At the societal level, what allowed for human anatomy research to develop and progress? What was happening with regard to slavery during the discovery and initial advancement of human anatomy? How may have slavery been related to this scientific discovery? What role did those who were enslaved and living in poverty have in the development of human anatomy research?

Week 3: Microbiology	
Day/Date	Tuesday, TBD
Theme	Microbiology: Research and History
Pre-Class Assignments	• Read ***scientific*** paper: David et al 2014 "Diet rapidly and reproducibly alters the human gut microbiome" (14 pages, skim Methods section) • *Optional reading*: Bordenave 2003 "Review: On the shoulders of giants Louis Pasteur (1822-1895)" (8 pages) • Pre-lecture journal reflection
Post-Class Assignments	• None
Topics/Questions Covered	What are the limitations to this research? History of the development of studying microbiology. Institutionally, what allowed for human anatomy research to develop and progress? What information is missing about the history of this research? Whose voices have been included (and excluded) and why?
Day/Date	Thursday, TBD
Theme	Microbiology: Anti-Racist Perspective
Pre-Class Assignments	• Read communications article Brown 1988 "The African Connection Cotton Mather and the Boston Smallpox Epidemic of 1721-1722" (3 pages) • Read editorial Blakemore 2019 "How an Enslaved African Man in Boston Helped Save Generations from Smallpox" (3 pages) • Read CDC history of smallpox (3 pages)
Post-Class Assignments	• Post-lecture journal reflection
Topics/Questions Covered	History of how enslaved people contributed to understanding how to vaccinate against smallpox pandemic. What was happening with regard to slavery during the discovery and initial advancement of microbiology? How may have slavery been related to this scientific discovery? Whose voices have been included (and excluded) and why? What is the tone written about the enslaved people during this particular pandemic?

Week 4: Genetics/Cell Biology	
Day/Date	Tuesday, TBD
Theme	Genetics: Research and History
Pre-Class Assignments	• Read ***scientific*** paper: Mitcheletti 2020 "Genetic Consequences of the Transatlantic Slave Trade in the Americas" (10 pages) • *Optional Reading*: Weiling 1991 "Historical study: Johann Gregor Mendel 1822–1884" (22 pages, has many pictures) • Pre-lecture journal reflection
Post-Class Assignments	• None
Topics/Questions Covered	History of the discovery of genetics. What does the reading suggest about the role of enslaved people impacting the genetics we see today? Institutionally, what allowed for genetics research to develop and progress? What information is missing about this science discovery? Whose voices have been included (and excluded) and why?
Day/Date	Thursday, TBD
Theme	Genetics: Anti-Racist Perspective
Pre-Class Assignments	• Read research article Lucey et al 2009 "Historical Perspective Henrietta Lacks, HeLa Cells, and Cell Culture Contamination" (4 pages) • Read editorial Miller 2020 "Henrietta Lacks: What to Know About Her 'Immortal' Cells, and Why Her Story's an Example of Racism in Medicine" (6 pages) • *Optional Reading*: Forsdyke 2014 "The relative roles of politics and science: William Bateson, black slavery, eugenics and speciation" (20 pages)
Post-Class Assignments	• Post-lecture journal reflection
Topics/Questions Covered	Who is Henrietta Lacks and what are HeLa cells? What was happening in society with regard to racism during this time? How may that have been related to or have influenced this time point for Henrietta Lacks? Whose voices have been included (and excluded) during this scientific discovery and why?

Week 5: Evolutionary Biology	
Day/Date	Tuesday, TBD
Theme	Evolutionary Biology: Research and History
Pre-Class Assignments	• Read ***scientific*** paper: Kelley et al 2013 "Spots and stripes: ecology and colour pattern evolution in butterflyfishes" (8 pages) • Pre-lecture journal reflection
Post-Class Assignments	• None
Topics/Questions Covered	What are the limitations to this research? History of the development of studying evolutionary biology. Institutionally, what allowed for evolutionary biology to develop and progress? What information is missing about the history of this research? Whose voices have been included (and excluded) and why?
Day/Date	Thursday, TBD
Theme	Evolutionary Biology: Anti-Racist Perspective
Pre-Class Assignments	• Read editorial Cockshaw 2020 "Charles Darwin on Racism, Slavery, and Eugenics" (10 pages) • Watch video "Human Zoos: America's Forgotten History of Scientific Racism" (55:03)
Post-Class Assignments	• Post-lecture journal reflection
Topics/Questions Covered	What was the purpose of the HMS Beagle? What was Darwin's perspective on slavery? How does this contrast or compare to his views about human evolution? What was the motive for scientific discovery during this time? What was happening with regard to slavery during the discovery and initial advancement of evolutionary biology? How is slavery related to this scientific discovery? Whose voices have been included (and excluded) and why?

Week 6: Zoology (vertebrates)	
Day/Date	Tuesday, TBD
Theme	Zoology (vertebrates): Research and History What Goes into Writing a Detailed Outline
Pre-Class Assignments	• Read ***scientific*** paper: Stoddard and Stevens 2011 "Avian vision and the evolution of egg color mimicry in the common cuckoo" (8 pages) • Pre-lecture journal reflection
Post-Class Assignments	• None
Topics/Questions Covered	History of the development of studying zoology. What are the limitations to this research? Institutionally, what allowed for zoology to develop and progress? What information is missing about the history of this research? Whose voices have been included (and excluded) and why?
Day/Date	Thursday, TBD
Theme	Zoology (vertebrates): Anti-Racist Perspective
Pre-Class Assignments	• Read book chapter "Birds of a Feather: The Whiteness of Birding" from *On Whiteness* (7 pages) • Read editorial Elbein 2020 "The Bird World Is Grappling With Its Own Confederate Relic: McCown's Longspur" (5 pages) • Read editorial Cahan 2020 "Amid protests against racism, scientists move to strip offensive names from journals, prizes, and more" (7 pages) • *Optional Reading*: Read editorial Borgmann 2019 "The Forgotten Female: How a Generation of Women Scientists Changed Our View of Evolution" (16 pages)
Post-Class Assignments	• Post-lecture journal reflection
Topics/Questions Covered	How might studying any biology discipline that requires creating scientific names for new species be related to racism? What was happening with regard to discrimination during these conversations? Whose voices have been included (and excluded) and why?

Week 7: Ecology	
Day/Date	Tuesday, TBD
Theme	Ecology (plants): Research and History
Pre-Class Assignments	• Read ***scientific*** paper: Luarte et al 2016 "Light pollution reduces activity, food consumption and growth rates in a sandy beach invertebrate" (6 pages) • Pre-lecture journal reflection
Post-Class Assignments	• Extra Credit: Detailed outline of Personal Essay due by end of Friday, midnight
Topics/Questions Covered	What are the limitations to this research? Why is this research so recent? History of the development of studying ecology. History of redlining. Institutionally, what allowed for ecology to develop and progress? What information is missing about the history of this research? Whose voices have been included (and excluded) and why?
Day/Date	Thursday, TBD
Theme	Ecology (plants): Anti-Racist Perspective
Pre-Class Assignments	• Read ***second scientific*** paper: Schell et al 2020 "The ecological and evolutionary consequences of systemic racism in urban environments" (9 pages) • Watch video "Housing Segregation and Redlining in America: A Short History" (6:36) • *Optional reading*: Nardone et al 2020 "Historic Redlining and Urban Health Today in U.S. Cities" (11 pages, has big figures, skim Methods section)
Post-Class Assignments	• Post-lecture journal reflection • Extra Credit: Detailed outline of Personal Essay due by end of Friday, midnight
Topics/Questions Covered	What is redlining? Why is redlining important? For whom is it important? How is redlining related to racism? How is redlining related to ecology? What was happening with regard to racial discrimination and/or immigration when redlining was first implemented? Whose voices have been included (and excluded) and why?

Week 8: Environmental Science	
Day/Date	Tuesday, TBD
Theme	Environmental Science: Research and History How to Give Peer Feedback on Writing
Pre-Class Assignments	• Read ***scientific*** paper: Vymazal and Březinová 2015 "The use of constructed wetlands for removal of pesticides from agricultural runoff and drainage: A review" (7 pages) • Pre-lecture journal reflection
Post-Class Assignments	• Preliminary draft of Personal Essay due by end of Friday, midnight
Topics/Questions Covered	What are the limitations to this research? History of the development of studying environmental science. Institutionally, what allowed for environmental science to develop and progress? What information is missing about the history of this research? Whose voices have been included (and excluded) and why?
Day/Date	Thursday, TBD
Theme	Environmental Science: Anti-Racist Perspective
Pre-Class Assignments	• Read data report Massey 2004 "Environmental Justice: Income, Race, and Health" (read pages 1-8 and 18-19) • Watch video "Carolyn Finney: Black Faces, White Spaces: Christian Cooper, John Muir & (Re)claiming a Green World" (watch up until 48:20)
Post-Class Assignments	• Post-lecture journal reflection • Preliminary draft of Personal Essay due by end of Friday, midnight
Topics/Questions Covered	What is environmental justice? How is environmental justice related to race? How is environmental justice related to environmental science? What was happening with regard to racial discrimination and/or immigration when environmental science was being developed? Whose voices have been included (and excluded) and why?

Week 9: Marine Biology	
Day/Date	Tuesday, TBD
Theme	Marine Biology: Research and History
Pre-Class Assignments	• Read ***scientific*** paper: Fong et al 2020 "Extreme rainfall events pulse substantial nutrients and sediments from terrestrial to nearshore coastal communities: a case study from French Polynesia" (7 pages) • *Optional reading*: Brylske 2002 "A Brief History of Diving: Free Divers, Bells and Helmets" (3 pages) • Pre-lecture journal reflection
Post-Class Assignments	• Two peer reviews of Personal Essay draft due by end of Friday, midnight
Topics/Questions Covered	History of the development of marine biology and diving. What are the limitations to this research? Institutionally, what allowed for marine biology to develop and progress? What information may be missing about this history?
Day/Date	Thursday, TBD
Theme	Marine Biology: Anti-Racist Perspective
Pre-Class Assignments	• Read research article Nzindukiyimana & O'Connor 2019 "Let's (not) meet at the pool: A Black Canadian social history of swimming (1900s–1960s)" (read pages 137-142 and 159-160) • Read viewpoint article Gaynus 2020 "A Statement from the Black Women in the Room" (1 page) • Read viewpoint article Cuker 2020 "George Floyd and Aquatic Science" (2 pages) • *Optional reading*: Moore 2018 "The Only Black Person in the Room" (2 pages)
Post-Class Assignments	• Post-lecture journal reflection • Two peer reviews of Personal Essay draft due by end of Friday, midnight
Topics/Questions Covered	Why is it important to understand racial discrimination in sports? How does this relate to marine biology? What is ASLO and what role does the student board member have on ASLO? Why is it important to think about diversity in professional societies, outside of academia? Whose voices have been included (and excluded) and why?

Week 10: Interdisciplinary Research Topics in Biology	
Day/Date	Tuesday, TBD
Theme	Interdisciplinary Research: Racism and Conservation
Pre-Class Assignments	• Read ***scientific*** paper: Kepe 2009 "Shaped by race: why "race" still matters in the challenges facing biodiversity conservation in Africa" (6 pages) • Pre-lecture journal reflection
Post-Class Assignments	• Final Personal Essay due next week (deadline TBD)
Topics/Questions Covered	What are the limitations to this research? How is this research related to conservation? How does conservation relate to race? Whose voices have been included (and excluded) and why?
Day/Date	Thursday, TBD
Theme	Interdisciplinary Research: Education and STEM End-of-quarter Wrap up
Pre-Class Assignments	• Read research paper: Griffith 2010 "Persistence of women and minorities in STEM field majors: Is it the school that matters?" (11 pages)
Post-Class Assignments	• Post-Class Survey • Post-lecture journal reflection • Final Personal Essay due next week (deadline TBD)
Topics/Questions Covered	What are some disciplines that can be interdisciplinary to traditional biology research? In what way or how can those disciplines be combined? At the societal or institutional level, what needs to be considered when doing interdisciplinary research? Why is it important to be interdisciplinary?

Sample Rubric for Lightning Talks

Category	Points		
	1	2	3
Time Limit: Did the group present for an appropriate amount of time and within the time limit? 8 minutes max for regular talk. 11 minutes max if including bonus background about methods/stats	• Group presentation was extremely short (1-3 minutes) OR • (4-6 minutes) including background on methods/stats	• Group presentation was relatively short (4-5 minutes) OR • (7-8 minutes) including background on methods/stats	• Group presentation was an appropriate length (6-8 minutes) OR • (9-11 minutes) including background on methods/stats
Organization: How organized was the presentation? How well did it flow between different speakers?	• Presentation was very choppy. Did not flow well from slide to slide • Transitions were also chopping between presenters	• Transitions between slides were average, but there are a couple of places where the group could improve their transitions • Transitions were okay between presenters	• Transitions between slides were very smooth. Topics flowed well from one to another • Transitions were acceptable between presenters
Format: How well structured was the presentation? Did the presenters include any informative media (e.g., photos, gifs, etc.)?	• Presentation has many words per slide and full sentences. There are very minimal fragment sentences • There are too many unnecessary and/or uninformative media (e.g. photos, gifs, etc.) • There are unnecessary animations that became too distracting	• Presentation has an even mix of full and fragment sentences • There are a couple of informative media (e.g., photos, gifs, etc.), but there are also a couple that may be unnecessary • The animations were acceptable, but there were a couple that were too distracting	• Presentation has an acceptable amount of bullets and fragment sentences • There are informative media (e.g., photos, gifs, etc.). There is at most 1 unnecessary media, but it did not disrupt the presentation • The animations were acceptable. It did not distract from the overall presentation
Detail: How in-depth did the group summarize the assigned reading?	• Does not go into any detail about the assigned reading	• There are some details about the assigned reading	• Goes into great detail about the assigned reading

	• Does not communicate or elaborate on any given section of the scientific study • Provides an uneven or inappropriate amount of focus on any given section of the paper	• Kind of communicates and elaborates on any given section of the scientific study • Provides a somewhat appropriate amount of focus on any given section of the paper	• Clearly communicates and elaborates on important information regarding any given section of the scientific study • Provides an appropriate amount of focus on any given section of the paper
INSTRUCTOR ONLY: Work Distribution: What percentage of the work responsibility did the other group member(s) give to this student?	• This student worked minimally on the presentation • This student did not present much of the presentation	• This student worked a fair amount for the presentation • This student presented a fair amount of the presentation	• This student worked an equal amount for the presentation • This student presented on an equal amount of the presentation

Peer Feedback Form for Personal Essay Drafts

1. Did the writer summarize and cite any reading assignments and/or lectures and relate it to their personal experiences? If not, do you have any suggestions on where the writer can reference any reading assignments and/or lectures?
2. How in depth did the writer go with sharing any personal experiences? What questions do you still have about any of the writer's personal experiences that you are curious to learn more about?
3. What specific areas did the writer do better compared to other areas? Specifically point out which area was better than another and why you thought that was the case
4. How well was the essay organized? Does the writing flow smoothly? What are ways in which the writer can make their essay more organized?
5. What other feedback do you have for the writer?

Journal Reflection Template

Pre lecture:

- What are your general thoughts on the scientific reading assignment(s) for this upcoming week? What was confusing to understand about the scientific reading assignment(s)?
- In your opinion, how do you think racism may be related to this upcoming week's biology discipline? *Try not to look at the syllabus in detail. There is no right or wrong answer.*
- Give a specific example(s) of what you think we will discuss in class this upcoming week. *Try not to look at the syllabus. There is no right or wrong answer.*

Post lecture:

- What are at least 2 main points you took away from this past week's reading assignments? You can discuss any of the reading assignments
- What are some ways racism is related to this past week's course topic that we discussed in class?
- What are some examples of how racism relates to the discipline that we did <u>*not*</u> discuss in class? *Try your best to respond. If you can't think of something, then say "I don't know yet" or "I don't know at the moment". It is perfectly acceptable if you cannot think of something.*
- Describe your personal experience during this past week's seminar

EE BIOL 98T

UCLA Course Inventory Management System

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New Course Proposal

Ecology and Evolutionary Biology 98T
History and Racism of Biology Research: Moving towards an Anti-Racist Science Future

Course Number Ecology and Evolutionary Biology 98T

Title History and Racism of Biology Research: Moving towards an Anti-Racist Science Future

Short Title

Units Fixed: **5**

Grading Basis Letter grade only

Instructional Format Seminar - 3 hours per week

TIE Code SEMT - Seminar (Topical) [T]

GE Requirement Yes

Major or Minor Requirement No

Requisites Enforced: Satisfaction of entry-level Writing requirement. Freshmen and sophomores preferred.

Course Description Seminar, three hours. Requisite: satisfaction of Entry-Level Writing requirement. Freshmen/sophomores preferred. Learn about the scientific process of biology research, and the history and racism of scientific discovery. We will read and discuss biology and education research papers and editorials through active learning, inclusive teaching, and anti-racist pedagogy framework. Letter grading.

Justification Part of the series of seminars offered through the Collegium of University Teaching Fellows

Syllabus File *CUTF_Syllabus_BenjaminHa_revised_vF.pdf* was previously uploaded. You may view the file by clicking on the file name.

Supplemental Information Instructor (Benjamin Ha) UID: 703825161

Professor Pamela Yeh is the faculty mentor for this course. UID: 700847967

Approved by the Collegium of University Teaching Fellows Faculty Advisory Committee on April 9, 2021

Grading Structure Syllabus Quiz 5%
Participation - Attendance, Journal Reflections, Participating during class discussions 30%
Lightning Talks 10%
Short Reading Quizzes 10%
Personal Essay Draft 15%
Peer Review of Personal Essay Draft 15%
Final Personal Essay 15%
Optional Extra Credit: Detailed outline of Personal Essay 3%

Effective Date Winter 2022

Discontinue Date Summer 1 2022

Instructor

Name	Title
Benjamin Ha	Teaching Fellow

Quarters Taught ☐ Fall ☑ Winter ☐ Spring ☐ Summer

EE BIOL 98T

Department **Ecology and Evolutionary Biology**

Contact	Name	E-mail
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Routing Help

ROUTING STATUS

Role: CUTF Coordinator - Fedyna,Alison (afedyna@teaching.ucla.edu) - 310/825-9149
Status: Pending Action

Role: Initiator/Submitter - Chen, Michelle L (mchen@teaching.ucla.edu) - 53042
Status: Submitted on 8/25/2021 3:27:04 PM
Comments: Initiated a New Course Proposal

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Comments or questions? Contact the Registrar's Office at
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