

## BILD 60 - Fall 2019

### Exploring Issues of Diversity, Equity and Inclusion as They Relate to Human Biology

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### **Class and Section Schedule**

Class: TuTh 11:00 - 12:20 pm,  
Mandeville B-150

Sections: A01 W 5:00 - 5:50 pm HSS 2152  
A02 W 6:00 - 6:50 pm HSS 2152

**Course Website:** on TritonED

### **Course Principles**

By its very nature, this course will include readings, presentations and discussions on difficult topics that affect human relations and feelings. Mutual respect and sensitivity are essential, as well as the strong consideration of privacy and tolerance. The class room should be experienced as a “safe zone”, where participation, conversation and discussion lead to learning and understanding, not to confrontation. Adherence to these principles is a requirement.

## **Course Overview**

In this course, we will examine diversity, equity, and inclusion in the context of human biology from a variety of perspectives. In each class, we will consider a biological topic, such as human genetics, and then examine how underlying biological differences can and have been used to support bias and prejudice against particular groups, such as women, African Americans, Latinos and LGBT individuals. We will begin with a discussion of ethical principles in biomedical research, and continue with the history of how self-serving assumptions about human heredity were used to justify the US Eugenics movement and how “science” was used to discriminate against specific human groups. Is eugenics a relic of an inglorious past? And can our ability to manipulate genomes spawn a modern-day version of this movement? This question will lead us into the topic of genomes, genome sequencing, and ultimately questions of how widely available genetic testing in a post-genomic age can affect individuals as well as different racial or ethnic groups in the US. The topic of epigenetics, beginning with the biology of chromosomal DNA modification, lays the foundation for examining whether and how the environment can affect DNA modification patterns and how this may have long-term transgenerational consequences for different ethnic and cultural groups. We will also discuss how genetics as well as environment and cultural issues affect public health and disease in the US. Finally, we will consider how development and sex hormones affect human brain structure and function, which will set the stage for examining differences in sexual identity as well as the establishment of gender and racial stereotypes, and the expression of witness bias. There will be guest lectures by experts in several of the topics we will cover.

*Ethical considerations*, as they relate to the topics of diversity, equity, and inclusion, will be an important focal point of this course.

## **Course Goals**

- To better understand the biological basis of differences between human groups
- To understand biological arguments that have been and are used to explain differences between human groups
- To learn how presumed biological differences and often false “scientific” arguments have been misused to justify prejudice and discrimination.
- To learn how environmental influences play an important role in human biology at molecular, cellular, and organismal levels, and how these influences can differ depending on human characteristics
- To better understand one’s racial/ethnic/gender/cultural identity in the wider context of other identities discussed in the course.

## **Student Teams**

The course is designed to be highly interactive. Lectures will include questions to the students and plenty of time for discussion. Students will also work cooperatively, in teams of 4 or 5 students that will be formed during the first discussion section meeting and become stable by the second week, when they will have chosen a team name. Teams will collaborate on in-class exercises as well as on a **research proposal** (described below).

## **Principal Assignment: Create a Research Proposal**

A key part of the course is the preparation by each team of a **Research Proposal**, which the team will present to the class towards the end of the course (see Schedule). Many questions and ideas will arise as we (and your Team) discuss the various topics we will cover. Many of these questions have no easy answers, nor are there observations/data that would support specific answers. Your team's assignment will be to select and discuss one such question or idea, do a critical analysis of the relevant literature, and come up with an "experimental approach" (hopefully novel?) for answering it. Your discussions and research will be the bases for creating a **Research Proposal** which your team will present and discuss in class. Your team will turn in a written version of the team's proposal. Half way in the course (October 24), each team will make a 5 min presentation on their topic background and hand in a list of references they have identified for their project.

The concept of a Research Proposal is based on the process we have to carry out scientific research. It requires that a well-constructed proposal be submitted to a funding source in order to obtain the funds to support the performance of the work. A proposal has the following parts: (1) Question(s) to be addressed (hypothesis?), (2) Relevant background and significance (why is the question important? what is already known?), (3) Research Plan (how will data be obtained?), (4) Discussion and future directions (in light of possible answers). Further details of this assignment will be discussed in the first class.

## **Discussion Sections**

Attending a Discussion Section is required throughout the quarter. A principal goal of the Sections is to work together on your projects, and to get feedback from the instructional assistant on your ideas and your use of sources and references. Later in the Quarter, the main objective will be to prepare your presentations: go over your materials and graphics, what to include or exclude, and how to organize your presentations.

## **Evaluation/Grading**

Grades: Letter grades (F through A+) will be assigned on the basis of several performance criteria, such as: (1) attend class and section regularly, participate in the in-class discussions, and answer clicker questions; (2) hand in weekly news article assignments (described below); (3) passing grades in 2 of 3 quizzes; and (4) make a final oral presentation of your Research Proposal and turn in a written copy.

Note: This is not a Pass/no Pass course, though you may opt for such a grade. To obtain a P for the course, you will need to perform at least at the level of a B letter grade in the course.

Attendance and Participation: (15 points) Points will be earned based on participation in class and section discussions, as well as answering clicker questions that will be asked during most class periods and will cover assigned reading material and class discussion.

Weekly News Assignment: (20 points) Every week, beginning the first week, each student must find a current (published within the last 5-6 months) news article that is related to diversity, equity or inclusion and science/medicine/health and write a brief report (up to 1 page, single-spaced) summarizing the news item and describing how it is related to some aspect of diversity, equity or inclusion. The source (or URL) of the news article must be cited in the report to receive credit. These news may be turned in through the course website on TritonED and are due every MONDAY by NOON. They will be graded on a scale of 0 to 2 points. Students must also be prepared to give a 2-3 minute oral presentation about their news items in class if called upon. A few students will be randomly selected to present at most class meetings.

Quizzes: (15 points each, 30 points total) There will be 3 required in-class quizzes, though only those with the highest 2 scores will count towards your grade. Quizzes will be on topics discussed in class as well as on readings. There is no midterm or final exam in this course.

Final Oral Presentation of Research Proposal: (25 points) Each team will give a 20-minute oral presentation to the entire class on their Research Proposal. All students in the group must participate in the oral presentation. A PowerPoint File of the presentation must be turned in by 5 pm the day prior to the scheduled presentation. **A written version** of the Proposal must be turned in within 3 days of the oral presentation. All members of each team will receive the same number of points for the quality of the team's Proposal (up to 18 points), but each individual will receive up to 7 additional points based on the quality of her/his presentation.

Reflection Essay: (10 points) At the end of the course you will be asked to write a 1 – 2 page essay reflecting on your experiences in the class and how (or whether) these have impacted your understanding and appreciation of issues related to DEI and how these affect the various identities considered during the course.

**LECTURE/CLASS SCHEDULE**

Sept 26 Thursday	<b>Eduardo Macagno</b> – <u>Introduction - topics, assignments, and course goals; the pervasiveness of racism in the USA</u> The UCSD Principles of Community. Why does UCSD have a DEI course requirement?
Oct 1 Tuesday	<b>Eduardo Macagno</b> – <u>Nature vs Nurture: The Concept of Race</u> Moral Instincts vs. Moral Norms. The evolution of empathy. The concept of “race” and the racialization of biological features. Race in biomedical research and medical practice.
Oct 3 Thursday	<b>Eduardo Macagno</b> – <u>Nature vs Nurture: Biological Determinism, Intrinsic vs Extrinsic Bias and Stereotype Threat</u> Naturome vs nurturome. Genetic and epigenetic inheritance of traits defining human potential in brain functions, behaviors and intelligence. Intrinsic and extrinsic bias, stereotype bias, defining the in-group and the out-groups.
Oct 8 Tuesday	<b>Stephanie Mel</b> – <u>The use of science to institutionalize discrimination: From eugenics to modern day genetic testing.</u> The Eugenics Movement in the USA lasted much longer than most people realize, and modern human genetics opens the possibility of new ways for genetic discrimination.
Oct 10 Thursday	<b>Stephanie Mel</b> -- <u>Who owns your tissues? Henrietta Lacks and other stories.</u> Most people are unaware that their tissues (biopsies, blood samples, surgically removed tissues or teeth, etc.) do not belong to them once removed from their bodies, and any financial gains derived from them belong to someone else.
Oct 15 Tuesday	<b>Eduardo Macagno</b> – <u>Epigenetics and the Consequences of Early Life Adversity.</u> Epigenetics may be a mechanism through which social and racial inequalities get perpetuated across generations.
Oct 17 Thursday	<b>Class Discussion</b> of topics/papers covered Sep 25 – Oct 16 <b>Quiz 1</b> (25 minutes)
Oct 22 Tuesday	<b>Eduardo Macagno</b> – <u>Topics of Current News Interest; Possible Subjects for the Research Project.</u> News reports topics related to DEI in the biomedical sciences. Discussion of possible topics for team projects

Oct 24 Thursday	<b>Eduardo Macagno</b> -- <u>Neuroscience and Racism</u>
Oct 29 Tuesday	<b>Tom Albright (Tentative)</b> -- <u>Reforming forensic science: some insights from research on vision and memory</u>
Oct 31 Thursday	<b>Eduardo Macagno</b> -- <u>Sexual differentiation of the brain</u>
Nov 5 Tuesday	<b>Student Teams - short presentations</b> (5 min/team) -- Brief presentations outlining Team Projects -- turn-in literature reviews.
Nov 7 Thursday	<b>Mary Devereaux</b> – <u>Sex &amp; Gender Bias in Biology and Medicine</u> Good science depends on objectivity in gathering and analyzing empirical data. Yet studies show that women and non-human female mammals get short shrift in biomedical research.
Nov 12 Tuesday	<b>Eduardo Macagno</b> – <u>The Demographics of Dementia; Brain Development &amp; Aging</u>
Nov 14 Thursday	<b>Class Discussion</b> of topics/papers covered Oct 22 – Nov 12 <b>Quiz 2</b> (25 minutes)
Nov 19 Tuesday	3 Student Team Presentations and Discussion
Nov 21 Thursday	3 Student Team Presentations and Discussion
Nov 26 Tuesday	3 Student Team Presentations and Discussion
Dec 3 Tuesday	3 Student Team Presentations and Discussion
Dec 5 Thursday	<b>Class Discussion</b> of presentations/proposals Nov 20 – Dec 4. Course wrap up/Fill out evaluations <b>Quiz 3</b> (25 minutes)

**NOTE: There is no Midterm or Final Exam in this Course**