

BILD 60 - Winter 2018

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

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Class and Section Schedule

Class: TuTh 9:30-10:50 am,
Mandeville B-150

Sections: A01 M 3:00 - 3:50 pm CTR 220
A02 W 7:00 - 7:50 pm CTR 220

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 used to explain differences between human groups
- To learn how biological differences and 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 race, ethnicity, and gender.
- 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 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 course (Feb 6), 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 based on your oral presentations in class (as spokesperson for your group) as well as on your participation in general class and section discussions.

Clicker Questions: (10 points) Clicker questions will be asked during each class period and will cover assigned reading material and class discussion. Points will be awarded for participation irrespective of the correctness of the selected answer (many questions will not have a single right answer).

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/health/medicine 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 SUNDAY by MIDNIGHT. They will be graded on a scale of 0-2 points. Students must also be prepared to give a 2-3 minute oral presentation about your news item 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.

Final Oral Presentation of Research Proposal: (25 points) Every 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 5 days of the presentation. All members of each team will receive the same number of points for the quality of the team's Proposal, but each individual will receive extra points based on the quality of her/his presentation.

Reflection Essay: (10 points extra credit) At the end of the course you will be asked to write a 1 – 2 page essay reflecting on your experience in the class, with particular emphasis on your identity in relation to other identities discussed during the course.

LECTURE/CLASS SCHEDULE

January 9 Tuesday	Eduardo Macagno – Introduction – Course topics and goals Reporting on news articles; defining a research topic for the Research Proposal. Students form groups of 5-6, introduce themselves to each other and discuss what they think Diversity, Equity, and Inclusion in Biology means to them, and present to the class on January 16 one issue/topic they think should be considered in the course. [Teams of 3 will be formed in Discussion Section and will chose a team name and a general research topic (<i>race, gender, ethnicity, age, disabilities, other?</i>)]
Jan 11 Thursday	Mary Devereaux – Gender bias in biology and medicine 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. Animal models of disease based on males are applied without justification to females, often with negative clinical results.
Jan 16 Tuesday	Eduardo Macagno - Nature vs Nurture. The concept of race in public health and in biomedical research. Stereotype bias, intrinsic bias and defining the in-group and the out-groups. Contributions of genetic and epigenetic inheritance of traits defining human potential in brain functions, behaviors and intelligence.
Jan 18 Thursday	Stephanie Mel – The use of science to institutionalize discrimination: From eugenics to modern day genetic testing. 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.
Jan 23 Tuesday	Amy Non – Epigenetic embodiment of early life adversity. Epigenetics may be a mechanism through which social and racial inequalities get perpetuated across generations. We will discuss case studies of epigenetic embodiment in Romanian orphans and among children of Hispanic immigrants.
Jan 25 Thursday	Stephanie Mel – Who owns your tissues? Henrietta Lacks and other stories. 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.
Jan 30 Tuesday	Class Discussion of topics/papers covered Jan 9 – Jan 25 Quiz 1 (25 minutes)

Feb 1 Thursday	Steffanie Strathdee – <u>Scientific Bias and a Forgotten Cure: The Strange History of Bacteriophage Therapy</u> Bacteriophages are viruses that have naturally evolved to attack bacteria and were first used to treat bacterial infections more than 100 years ago. This lecture will discuss the reasons why phage therapy became largely abandoned in the West, including the geopolitical forces and personal biases that rendered it a ‘forgotten cure’ until a recent case involving UCSD faculty thrust it back into the spotlight.
Feb 6 Tuesday	Student short presentations (5 min/team) Brief summaries of status of Team Projects -- turn-in literature review.
Feb 8 Thursday	Eduardo Macagno – <u>The neuroscience of racial and gender bias.</u> Empathy and compassion; mirror neurons.
Feb 13 Tuesday	Tom Albright – <u>Reforming forensic science: some insights from research on vision and memory</u> Significant weaknesses in forensic science, which have contributed to wrongful convictions and threaten public confidence in our criminal justice system. Several types of forensic analyses involve evaluation and comparison of complex visual patterns or memories of visual experiences.
Feb 15 Thursday	Eduardo Macagno -- <u>The fluidity of sex and gender</u> Gender disparities in the human brain.
Feb 20 Tuesday	TBD
Feb 22 Thursday	Class Discussion of topics/papers covered Feb 1 – Feb 20 Quiz 2 (25 minutes)
Feb 27	3 Student Team Presentations and Discussion
March 1	3 Student Team Presentations and Discussion
March 6	
March 8	3 Student Team Presentations and Discussion
March 13	3 Student Team Presentations and Discussion

March 15	Class Discussion (of topics covered Feb 27 – March 13) Course wrap up/Fill out evaluations Quiz 3 (25 minutes)
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NOTE: There is no Midterm or Final Exam in this Course