



DNA & Human Society

Instructor:

Raquel Fleskes

PhD Candidate, Biological Anthropology

Session & Time:

Module II, 1:30-4:00pm

Abstract:

DNA & Human Society offers students an introductory survey on the application of DNA technologies in our contemporary society. In this course, students will gain a basic understanding of DNA, genetic inheritance, and gene expression. But, different than a classical biology class, this course will explore *how* this information is used to understand topics such as human evolution, genetic disease, crime scene investigations, as well as contemporary discussions about race, identity, and bio-ethics. During this module, students will listen to lectures, partake in multi-modal learning activities, and class discussions to meet learning goals. Students will also learn how to read and understand scientific papers and craft an effective research presentation.

Goals for Students:

1. Gain a basic understanding of genetic theory, and its application to contemporary issues in human society.
2. Increase scientific literacy and research skills in STEM by reading and comprehending academic journal articles pertaining to course topics.
3. Increase student professionalization skills by communicating scientific research through research presentations.

4. Expose students to the field of biological anthropology by discussing career opportunities and practical strategies for students during their high school and undergraduate experience.

Assignments:

Group Research Presentation: Students in groups of 3-4 will pick a scientific research article that they will read, synthesize, and give a 12-minute presentation during the final class session. The research articles will pertain to topics relating to Biological Anthropology and covered throughout the course of the module. This exercise will help introduce students to how to read, understand, and effectively communicate scientific research articles.

Syllabus:

Day	Theme	Topics & Activity
1	What is Biological Anthropology?	<ol style="list-style-type: none"> 1. Course & Class Introduction 2. <u>Lecture:</u> What is Biological Anthropology & the Anthropological Mindset 3. <u>Activity:</u> Ethics in DNA Story Card Discussion 4. <u>Research Presentation Assignment</u> – Groups and Paper Selection
2	What is DNA?	<ol style="list-style-type: none"> 1. Attendance & Daily Overview 2. <u>Lecture:</u> Overview of DNA: Structure, Genes, and Inheritance 3. <u>Activity:</u> Genomic and Mitochondrial DNA Gummy Models 4. <u>Research Presentation Assignment</u> – How to Read a Scientific Paper
3	DNA and Disease	<ol style="list-style-type: none"> 1. Attendance & Daily Overview 2. <u>Lecture:</u> Genetic Mutations, Protein Expression, and Disease Outcomes 3. <u>Activity:</u> KRAS Mutation Activity 4. <u>Research Presentation Assignment</u>
4	DNA Ethics: CRISPR Technology	<ol style="list-style-type: none"> 1. Attendance & Daily Overview 2. <u>Lecture:</u> Gene Editing Technology 3. <u>Activity:</u> TEDTalks & Senarios: CRISPR 4. <u>Research Presentation Assignment</u>
5	Research Presentation Prep!	<ol style="list-style-type: none"> 1. Attendance & Daily Overview 2. <u>Research Presentation Assignment</u> - How to Make and Deliver an Effective Research Presentation
6	DNA and Human Origins	<ol style="list-style-type: none"> 1. Attendance & Daily Overview 2. <u>Lecture:</u> Ancient DNA, Evolution, and Human Migration 3. <u>Research Presentation Assignment</u>
7	DNA and Genetic Ancestry Testing: Impact on Identity	<ol style="list-style-type: none"> 1. Attendance & Daily Overview 2. <u>Lecture:</u> Commercial Genetic Ancestry Testing & Genetic Essentialism 3. <u>Activity:</u> Strawberry DNA Extraction Activity & Discussion 4. <u>Research Presentation Assignment</u>
8	Human Variation	<ol style="list-style-type: none"> 1. Attendance & Daily Overview 2. <u>Lecture:</u> Human Genetic Variation and Adaptations 3. <u>Activity:</u> Let's make a baby! 4. <u>Research Presentation Assignment</u> – Presentation Assembly and Practice
9	Group Presentations	<ol style="list-style-type: none"> 1. Attendance & Daily Overview 2. Group 1-4 Presentations 3. Group 5-7 Presentations