**Anthropology 3597.04**

**Expected Learning Outcomes**

1. ***Students understand the basic facts, principles, theories and methods of modern science.***
2. ***Students understand key events in the development of science and recognize that science is an evolving body of knowledge.***
3. ***Students describe the inter-dependence of scientific and technological developments.***
4. ***Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.***

| **Anthro 3597.04** | **Topic** | **ELO(s) Satisfied** | **Assessment Direct Measure** |  |
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| Week 1 | Introduction to genes, loci, proteins, genomics and proteomics – Why anthropology – Environment of Evolutionary Adaptation (EEA) – Reading the Scientific Literature – the omics revolution, microarrays, CRISPR. |  |  |  |
| Week 2 | Epigenetics and microRNAs – Changing health in the 19th through 21st centuries – Personalized or Impersonal medicine and Genomics. | 1, 2 | 10-question mock quiz. | A pre-test for 10 questions that will be re-tested throughout the term embedded in quizzes. |
| Week 3 | From DNA to phenotypes. Common genetic variation and human traits; Genomics and its impact on science and society The HLA system, Cloning, Forces of Evolution. **Quiz.** | 1, 2 | Embedded questions | Criteria ≈ 75% (100% improvement on pre-test scores ≤ 40%; 25% improvement on pre-test scores between 50% and 75%; no criteria for pre-test scores ≥ 75%) |
| Week 4 | Evolution in action: SARS, CCR5-delta32, single locus and multi-locus conditions, antagonistic pleiotropy, epistasis, gene-environment interactions – Modern Human Variation – Ecological Fallacies – The New Eugenics. | 1, 2 |  |  |
| Week 5 | Biological determinism, sociobiology, natural experiments, heritability, non- communicable diseases and chronic degenerative conditions, cholesterol, salt, integrating genetics with epidemiology, evolutionary medicine and the future. **Quiz.** | 1 | Embedded questions | Criteria ≈ 75% (100% improvement on pre-test scores ≤ 40%; 25% improvement on pre-test scores between 50% and 75%; no criteria for pre-test scores ≥ 75%) |
| Week 6 | “Impersonal Genomics and Anthropology”; “Common genetic variation and human traits”; “Rethinking behavioral genetics”. | 2 |  |  |
| Week 7 | “The double puzzle of diabetes”; “Nature, nurture and human disease”; “Gene-culture coevolution between cattle milk protein genes and human lactase genes”; “Private and public eugenics: Genetic testing and screening in India”. **Quiz.** | 1, 3 | Embedded questions | Criteria ≈ 75% (100% improvement on pre-test scores ≤ 40%; 25% improvement on pre-test scores between 50% and 75%; no criteria for pre-test scores ≥ 75%) |
| Week 8 | “Your genes and privacy”; “ASHG statement on direct-to-consumer genetic testing in the US”; “The prospect of genome-guided preventive medicine: A need and opportunity for genetic counselors”. | 3 |  |  |
| Week 9 | “Influence of life stress on depression: Moderation by polymorphism in the 5-HTT gene”; “Genetic variation, classification and 'race'”; “Double helix jeopardy”; “Tales of a prehistoric human genome”; “How does scientific risk assessment of GM crops fit within the wider risk analysis?” **Quiz.** | 3, 4 | Embedded questions | Criteria ≈ 75% (100% improvement on pre-test scores ≤ 40%; 25% improvement on pre-test scores between 50% and 75%; no criteria for pre-test scores ≥ 75%) |
| Week 10 | “Maize plants: An ideal production platform for effective and safe molecular pharming”; “Human health concerns with GM crops”; “How does scientific risk assessment of GM crops fit within the wider risk analysis?”; “Consumer risk perceptions toward agricultural biotechnology, self-protection, and food demand: The case of milk in the US”. | 3, 4 |  |  |
| Week 11 | “Gene patenting: Is the pendulum swinging back?”; “Did the end of smallpox vaccination cause the explosive spread of HIV?”; “First birth of an animal from an extinct subspecies (*Capra pyrenaica pyrenaica*) by cloning”; “The dangers of diagnostic monopolies”. **Midterm Exam** | 4 | Embedded questions | Criteria ≈ 75% (100% improvement on pre-test scores ≤ 40%; 25% improvement on pre-test scores between 50% and 75%; no criteria for pre-test scores ≥ 75%) |
| Week 12 | “Prenatal genetic testing kits sold at your local pharmacy: promoting autonomy or promoting confusion?”; “Meet your unborn child – before it’s even conceived”; “Common DNA markers can account for more than half of the genetic influence on cognitive abilities”. | 4 | Student survey (indirect measure) |  |
| Week 14 | Student presentations; Papers due.  **Quiz** |  | Embedded questions | Criteria ≈ 75% (100% improvement on pre-test scores ≤ 40%; 25% improvement on pre-test scores between 50% and 75%; no criteria for pre-test scores ≥ 75%) |