

GENETICS IN A MODERN WORLD, CERTIFICATE

This certificate provides students from a wide array of academic backgrounds with an opportunity to explore the relationship between modern genetics research and society. Students learn how genetics research has influenced society and how society shapes the direction of genetics research.

Expert instructors from the Department of Genetics provide students with a strong foundation in the challenges and opportunities that arise from innovations in genome sequencing technology, particularly in the areas of human health and disease. Elective coursework located in a variety of departments allows students to situate this foundational, scientific knowledge within an area of personal or career interest.

This certificate equips students pursuing diverse academic paths with the knowledge to think critically about their unique place within the ever-changing landscape of genetic knowledge and application. Students will be called to engage in ethical, evidence-based discussions about the relationship between cutting-edge genetics research and our world in the classroom and beyond. The Genetics in a Modern World certificate, guided by our team of dedicated instructors and advisors, will open doors into both public and private sector careers and promises to be a cornerstone of your Wisconsin Experience (<https://wisconsinexperience.wisc.edu/>).

HOW TO GET IN

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Undergraduate students in any major or college may earn this certificate. There are no prerequisites for declaring the certificate; however, there may be prerequisites for individual courses in the certificate. Students will be informed of these prerequisites through Guide and advised to fulfill those requirements. Students pursuing the program are encouraged to declare as early as possible so that they can best align the coursework with their interests.

Students wishing to declare the Certificate in Genetics in the Modern World should meet with one of the advisors (listed in the Contact Information box) to declare the certificate.

REQUIREMENTS

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Code	Title	Credits
Foundation Courses		
Complete the following courses:		
GENETICS 133	Genetics in the News	3
GENETICS 234	Genomes and Society	3
Interdisciplinary Electives		
Complete one course. See list below.		3
Integration Course		
Complete the following course:		

GENETICS 335	Genomes in a Modern World	3
Total Credits		12

INTERDISCIPLINARY ELECTIVES

Code	Title	Credits
ZOOLOGY 415	Genetics of Human History	3
PLANTSCI 340	Plant Genome Engineering and Editing	3
PLANTSCI 338	Plant Breeding and Biotechnology	3
MED HIST/PATH-BIO 370	Addressing Controversy: The Science, Ethics, and Public Discussion of Animal Research	3
MED HIST/C&E SOC/PHILOS 565	The Ethics of Modern Biotechnology	3
PSYCH 601	Current Topics in Psychology	3
PSYCH 603	Epigenetics and the Brain	3
RELIG ST/JEWISH 340	The American Jewish Life of DNA	3
GEN&WS 530	Biology and Gender	3
HIST SCI 133	Biology and Society, 1950 - Today	3
ANTHRO 304	Heredity, Environment and Human Populations	3
PUB AFFR 523	Policy, Privacy, and Personal Identity in the Postgenomics Era	3

Additional Requirements:

- 2.000 GPA in certificate courses.
- At least 50% of certificate courses taken in-residence (i.e. at UW-Madison or through a UW-Madison sponsored study abroad program.)
- Courses taken on a pass/fail (satisfactory/unsatisfactory) basis will not count toward the certificate.

CERTIFICATE COMPLETION REQUIREMENT

This undergraduate certificate must be completed concurrently with the student's undergraduate degree. Students cannot delay degree completion to complete the certificate.

LEARNING OUTCOMES

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1. Explain current topics in genetics and genomics by applying basic genetic knowledge and simple scientific methodologies from current research.
2. Engage in dialogue about the implications of genetics and genomics on everyday life, addressing ethical, societal, legal, and/or scientific perspectives.
3. Describe applications, practices, and policies to address ethical, economic, environmental, legal, and/or social challenges and opportunities created by genomics-based innovations.
4. Integrate life sciences and humanities/social sciences perspectives to address current questions related to ethics, history, social science, and/or public policy, and their interaction with contemporary genetics and genetics research.

5. Present your interdisciplinary perspective on the relationship between genomes and society to diverse audiences.

ADVISING AND CAREERS

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Each certificate student is assigned an advisor who helps the student navigate a path to achieve their academic and career goals. Advisors and CALS Career Services (<https://cals.wisc.edu/academics/undergraduate/current-students/career-services/>) can help students connect their major and certificate studies to enhance future career opportunities in areas such as healthcare, biomedical research, education, technology, law, and journalism among others.

Students may email the certificate advisors listed in the contact information box with questions or to set up an advising appointment.

WISCONSIN EXPERIENCE

WISCONSIN EXPERIENCE RESEARCH EXPERIENCE

Students pursuing the certificate can choose to be involved in campus research mentored by renown geneticists who are leaders in their field. Many opportunities exist to gain hands-on expertise in both plant and human genetics.

COMMUNITY ENGAGEMENT

Several student organizations related to genetics are available on campus: the Undergraduate Genetics Association (UGA) (<https://win.wisc.edu/organization/UGA/>) and the Pre-Genetics Counseling Organization (PGCO) (<https://win.wisc.edu/organization/pregeneticcounseling/>). Campus-wide and greater Madison opportunities exist for students pursuing the certificate, whereby they can become involved in summer STEM programs and community-based scientific outreach (among others) to help elevate scientific literacy and facilitate excitement for science in our community.

INTERNSHIPS AND INDUSTRY EXPOSURE

Opportunities to apply classroom learning to the biotech industry are particularly ripe on and near campus as Madison is one of the fastest growing biotech centers (Wisconsin Biohealth Tech Hub (<https://www.bioforward.org/wisconsin-biohealth-tech-hub/tech-hub-overview/>)) in the nation. With this certificate students may be strong candidates for available internships.