

BIO3002H - Genetic Engineering: Miracle for Humanity or New Pathway to Eugenics?

Fall 2021. Hybrid (In-Person/Asynchronous Online)

Honor Eligibility Required, 3-credits

Instructors

<p>Dr. Mannie Liscum email: liscume@missouri.edu Joint Zoom Office/Student* Hours: Mondays 2-3 pm or by appointment <i>*Student Hours are the same as traditional Office Hours but reminding us that the focus is on the STUDENT.</i></p>	<p>Dr. Michael Garcia email: garciaml@missouri.edu Joint Zoom Office/Student* Hours: Mondays 2-3 pm Mon or by appointment <i>*Student Hours are the same as traditional Office Hours but reminding us that the focus is on the STUDENT.</i></p>

Course Description

The purpose of the course is to introduce students to the implications of genetic engineering from multiple vantage points. As eluded to in the course title, the course will delve into various approaches and applications of genetic engineering, from the pre-molecular era eugenics movement to emerging present-day development of precision medicine. We will examine these approaches and applications through lectures, documentary films, readings, debate, and extensive discussions, so as to address both positive and negative impacts on science and society. Students will engage in both individual, as well as group work; with regular instructor feedback and prompts.

Learning Objectives & Goals

Students in this class will critically **examine** genetic engineering methodologies and applications, and **identify** and **describe** the potential pitfalls of such approaches (both technical and ethical) in historical, present day and future contexts. Students will be asked to **apply** this information through quizzes, written work, group discussions, and **debate**. Students will be expected to work both independently, in small groups, and as part of the larger class, to **synthesize, integrate** and **share** gained understanding with a goal toward learning how to more effectively **reflect** upon, **question** and **communicate** the roles and impacts of science in society.

After you complete this course, you should be able to:

1. **Examine** discussions of scientific concepts and applications, across a range of media platforms, with a critical eye toward impacts on society;
2. **Identify** and **Describe** positive and negative aspects of scientific 'advancements' as they relate to society and science itself;
3. **Apply** your nuanced understanding of scientific 'advancements' to novel challenges;
4. **Debate** the positive and negative aspects scientific 'advancements' in clear and objective ways with peers and other members of society;
5. **Synthesize, Integrate, Reflect** upon, and **Question**, within broader historical, ethical and moral contexts new scientific 'advances', applications and interpretations as they arise;
6. **Communicate** and **Share** your critical understanding of scientific 'advances' as well as their potential ethical and moral impacts with society more broadly.

Expectations & Etiquette

Work

This is a hybrid course, which means it is a mixture of in-person and online activities. Most weeks we will meet in-person for discussions at least once during our regular scheduled meeting time (actual meeting dates will be known at least one week in advance). The remainder of the work will be done online or off-line outside of regular class meeting time. These online/off-line interactions will be 'asynchronous,' meaning they will occur at different times of the day throughout the week depending upon the individual(s).

Time Commitment and Expectations from You

This is a 3-credit course, which means you can expect to spend up to **9-15 hours*** a week on activities; from in-person class time, reading assignments, watching various video assignments, quizzes, discussions and group assignments on Canvas, to participating in [multi-week 'debates'](#) using [Kialo Edu \(Links to an external site.\)](#). **You should access the course site at least once every day throughout the week to read announcements and contribute to online discussions and 'debate' work.**

Online learning is an interactive exercise and your contributions to discussions and 'debates' will impact not only your experience but that of your peers. The more you put into this course, the more you and others will get out of it.

Several of your assignments this semester will require you to 'research' various topics and to then construct written/oral narratives of your work. This work will necessitate proper attribution of thoughts and ideas that are not your own. Please refresh yourself on [how to properly research and cite materials, and avoid plagiarism](#).

We recommend you check your Mizzou E-mail at least three times a week so you don't miss any correspondence from your classmates or instructors. You should set your Canvas Preferences to receive emails for course Announcements.

*Please note that all estimates are precisely that: *estimates*. The pace of your reading, extent of care and attention you put into discourse on the discussion boards and 'debates' will impact the amount of time it takes you to complete activities each week.

What to Expect from the Instructors

As your course instructors, we will:

- prompt and facilitate in-person discussions;
- prompt, monitor and facilitate online discussions (including answering public questions), Monday through Friday (though it should be expected that we may contribute on weekends);
- respond to private questions sent via the messages in Canvas (see "Inbox" in the navigation to the left) or email typically within 24 hours during weekdays; response times could be longer on weekends. You should not expect responses outside the hours of 8:00 am - 8:00 pm;
- Conduct Zoom office hours during scheduled times (*see Instructor info at the top of this page*) and by appointment;
- provide timely feedback on assignments, discussions and 'debate' components; and
- help foster a learning community.

Here is an outstanding guide for things to consider when communicating online:

<http://www.albion.com/netiquette/corerules.html> ([Links to an external site.](#))

Required Materials

As an online course, most of the course materials will be available on Canvas or via free links to Web resources. There are two notable and essential exceptions:

1. REQUIRED course reading (see list below - you can get these online either as hard-copy books or eBooks; or the Mizzou Store will have all of the REQUIRED and non-required books); and
2. The Netflix documentary [Unnatural Selection \(Links to an external site.\)](#) (2019) - this requires access to Netflix (either via paid membership or 'trial membership')

REQUIRED Reading List

- *Pandoras Lab* by Paul Offit ([Amazon \(Links to an external site.\)](#) or [Yumpu \(Links to an external site.\) \(Links to an external site.\)](#))
- *So You Think You Can Think: Tools for Having Intelligent Conversations and Getting Along* by Christopher DiCarlo ([Amazon \(Links to an external site.\)](#) or [eBooks \(Links to an external site.\)](#))
- *The Power of Ethics: How to Make Good Choices in a Complicated World* by Susan Liautaud ([Amazon \(Links to an external site.\)](#) or [eBooks \(Links to an external site.\)](#))
- *Imbeciles: The Supreme Court, American Eugenics, and the Sterilization of Carrie Buck* by Adam Cohen ([Amazon \(Links to an external site.\)](#) or [eBooks \(Links to an external site.\)](#))
- *Hitler's American Model: The United States and the Making of Nazi Race Law* by James Whitman ([Amazon \(Links to an external site.\)](#) or [eBooks \(Links to an external site.\)](#))
- *Social Mendelism: Genetics and the Politics of Race in Germany, 1900-1948* by Amir Teicher ([Amazon \(Links to an external site.\)](#) or [eBooks \(Links to an external site.\)](#))
- *Editing Humanity: The CRISPR Revolution and the New Era of Genome Editing* by Kevin Davies ([Amazon \(Links to an external site.\)](#) or [eBooks \(Links to an external site.\)](#))

Additional (Non-Required) Reading

- *The New Eugenics: Modifying Biological Life in the Twenty-First Century* by Conrad B. Quintyn ([Amazon \(Links to an external site.\)](#))

Required Technology

All of the following (minimally) will be needed to complete this course:

- A computer, laptop, and/or smart mobile device with each of the following:
 - Up-to-date Web browser
 - Word processing software (such as MS Word)
 - [Adobe Acrobat Reader \(Links to an external site.\)](#) (or like PDF reader)
 - [Zoom software \(Links to an external site.\)](#) or app
 - Video camera/webcam
 - Speaker(s) or headphones
 - Microphone
- A stable Internet connection

Note: This list represents the minimum technology requirements for the course. Be aware you may need additional resources (e.g., other downloaded/installed technologies, an account for online services, or use additional online collaboration tools) as the course proceeds. All attempts to avoid fee-based additional resources will be made.

Minimal Technical Skills

Some basic technical skills will be required to excel in this course:

- The ability to open, edit, and save documents (Word, Google Docs, etc);
- The ability to open PDF files;
- The ability to navigate and perform various functions in Canvas, including:
 - uploading and submitting word-processing documents;
 - posting text-based comments on a discussion forum threads and replying to peers' posts;
 - recording and posting a video on a discussion forum thread;
 - accessing the Groups feature;
 - using the Collaborations tools;
 - taking a quiz;
 - accessing the Grades area;
 - accessing the Calendar tool;
 - updating your Account information (e.g. profile/bio, notification preferences, contact information);
 - using the Inbox feature to communicate with your facilitator and peers by email;
- The ability to run Zoom software or app to participate in virtual meetings;
- The ability to run Web-based searches and utilize Web-based sources such as the 'debate' platform [Kialo Edu \(Links to an external site.\)](#); and
- The ability to use peripheral computer components (such as webcam/camera, speakers, and microphone).

Grading

There are 450 points available in this course, being available from various assignments as follows:

Assignment	Points/Assignment	Total Points
In-person Class Session (Attendance) (x18)	5	90
Discussion: Introductions	10	10
Online Reflective Discussions (x5)	15	75
Online Reflection on Ethics in Critical Thought	10	10
In-class Reflective Discussions (x3)	15	45
Quizzes (x3)	10	30
Debate Project		
Topic Selection	5	5
Stage I (Research)	75	75
Team Collaboration Plan	10	10
Stage II (Narrative Summary)	50	50
Stage III (Position Paper)	25	25
Stage IV (Oral Debate)	25	25
		450

With the exception of Quizzes, all assignments will be graded according to Rubrics posted with each assignment. The course will be graded +/- (see grading scale [here](#)).

Mobile Access

There are both iOS and Android [apps available for Canvas \(Links to an external site.\)](#).

Please note that some Canvas features function well across physical platforms (computer/laptop vs tablet or phone) while others perform better on computers/laptops. You may need to adjust your work accordingly.

There are also [mobile apps for Zoom \(Links to an external site.\)](#).

Technical Support

If you have difficulty logging into Canvas or have any other technical difficulties, please contact Mizzou Tech Support at (573) 882-5000, email (techsupport@missouri.edu), or [live chat \(Links](#)

[to an external site.](#)). The "Help" link on the far left Canvas menu also offers access to 24/7 Canvas help chat support.

Policies

Diversity, Equity & Inclusion

Academic excellence happens only in diverse, equitable, and inclusive environments. The value we place on diversity, equity and inclusion should become obvious when you explore the course content; we will spend much of our time focusing on how science has (and can) intersect with society to suppress (or even eliminate) diversity, equality and/or inclusion.

We can accomplish our learning outcomes if we operate in an inclusive, unbiased and prejudice-free environment that values, respects, and welcomes **all** individuals with their diverse backgrounds, experiences and perspectives. This requires that everybody be respectful of others in the community (students, faculty, and staff), regardless of their backgrounds. It also requires appreciating that interacting with people of different backgrounds is an opportunity for personal and intellectual growth. We expect everyone in this class to follow the principles laid out in the [Diversity Statement of the Division of Biological Sciences \(Links to an external site.\)](#). Please take the time to read the complete statement and understand the expectations.

University of Missouri policies prohibit discrimination on the basis of race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, pregnancy, age, genetic information, disability and protected veteran status. Discrimination includes any form of unequal treatment such as denial of opportunities, harassment, and violence. Sex-based violence includes rape, sexual assault, unwanted touching, stalking, dating/interpersonal violence, and sexual exploitation.

If you experience discrimination, you are encouraged (but not required) to report the incident to the **MU Office for Civil Rights & Title IX**. Learn more about your rights and options at civilrights.missouri.edu (Links to an external site.) or call 573-882-3880. You also may make an anonymous report online.

Students may also contact the Relationship & Sexual Violence Prevention (RSVP) Center, a confidential resource, for advocacy and other support related to rape or power-based personal violence at rsvp@missouri.edu or 573-882-6638, or go to rsvp.missouri.edu (Links to an external site.).

Both the Office for Civil Rights & Title IX and the RSVP Center can provide assistance to students who need help with academics, housing, or other issues.

Required Referral: Mizzou employees are required to refer all incidents of sex discrimination to the Office for Civil Rights & Title IX. The Office connects students with resources and helps them decide whether they wish to file a complaint of discrimination. To learn more, contact title9@missouri.edu or 573-882-3880, or go to civilrights.missouri.edu (Links to an external site.).

Online Etiquette and Discourse

Please see the '[About Discussions](#)' page for our expectations for interaction and 'netiquette' in this course.

Accommodations

If you need accommodations because of a disability, if you have emergency medical information to share with the instructors, or if you need special arrangements in case the building must be evacuated, please inform the instructors immediately.

To request academic accommodations (for example, a note-taker), students must also register with the Disability Center, S5 Memorial Union, 882-4696 (video phone, 573-234-6662, email: disabilitycenter@missouri.edu ([Links to an external site.](#))). It is the campus office responsible for reviewing documentation provided by students requesting academic accommodations, and for accommodations planning in cooperation with students and instructors, as needed and consistent with course requirements. For other MU resources for students with disabilities see <https://disabilitycenter.missouri.edu/> ([Links to an external site.](#)).

Late work

Late work will not be accepted *post hoc*. If you know you will have an issue making a due date (**ALL** of which are known at the beginning of the semester), please ask the instructors well in advance of the due date if accommodations can be made. Even if an accommodation is made, the instructors will assess 'late fees.' Otherwise, late work will receive a zero.

"Accommodated" reasons for turning in late work include a death in the immediate family, illness of you or a person who requires your care (doctors note may be required), or other emergency situations (decided on a case-by-case basis with sufficient documentation).

If you are a student-athlete at Mizzou or participate in University-sponsored functions and need to be gone, please notify the instructor(s) via a sponsor's letter of the dates at least one module in advance in order for alternative arrangements to be made.

Any student not logging in for >1 week without explanation may be dropped from the class.

Other policies

Please visit the [MU Policies & Expectations](#) ([Links to an external site.](#)) page to learn more about the University's policies, such as ***Academic Integrity, Intellectual Pluralism, Executive Order No. 38, Statement of Nondiscrimination, Copyright and Acceptable Use.***

Academic Integrity policy in this class: Academic integrity is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. Any student behaving dishonestly, such as cheating or plagiarizing a writing assignment (in part or fully), will be given ZERO CREDIT for that particular exam. Cheating includes (but is not limited to) receiving any form of information during an exam (other than that provided by the instructors), or looking at the work of any other student. Plagiarism includes (but is not limited to) using others words or ideas as your own without proper citation and credit. If you are unsure about plagiarism issues please ask the instructors. In addition to receiving a zero for the assignment, any student found to be acting in an academically dishonest way will be reported to our Department chair and to the University Provost. This type of academic infraction can result in expulsion from MU! When in doubt about plagiarism, paraphrasing, quoting, or collaboration, consult the course instructors.

Course Summary:

Date	Details	Due
Tue Aug 24, 2021	Assignment In-person Class (24 Aug): 'Welcome to 'Genetic Engineering: Miracle for Humanity or New Path to Eugenics'	due by 12:30pm
Wed Aug 25, 2021	Assignment Week 1 Introductory Discussion - "Getting to Know a Little About Each Other" & Affirmation of Course Etiquette	due by 5pm
Thu Aug 26, 2021	Assignment In-person Class (26 Aug): Debate Project Introduction	due by 12:30pm
Mon Aug 30, 2021	Assignment Reading: "So You Think You Can Think" by Christopher DiCarlo (pp. xi-121)	due by 8am
	Assignment Week 1: Reflections on "Pandora's Lab" by Paul Offit	due by 8am
	Calendar Event BIO_SC-3002H Student Hours	2pm to 3pm
Tue Aug 31, 2021	Assignment In-person Class (31 Aug): Constructing an Argument	due by 12:30pm
Thu Sep 2, 2021	Assignment Reading: "So You Think You Can Think" by Christopher DiCarlo (pp. 123-193)	due by 12pm
	Assignment In-person Class (2 Sept): Constructing/Deconstructing & Criticism of an Argument	due by 12:30pm
	Assignment Debate Project Topic Selection	due by 5pm
Mon Sep 6, 2021	Assignment Reading: "The Power of Ethics" by Susan Liataud (pp. 1-63)	due by 8am
	Assignment Week 2 Interactive Assignment: "Constructing/Deconstructing & Criticizing an Argument"	due by 8am
	Calendar Event BIO_SC-3002H Student Hours	2pm to 3pm
Wed Sep 8, 2021	Calendar Event Private Office Hour	9:30am to 10:30am
Thu Sep 9, 2021	Assignment Reading: "The Power of Ethics" by Susan Liataud (pp. 65-149)	due by 12:01pm
	Assignment In-person Class (9 Sept): Ethics on the Edge - Framework & Drivers (Part 1)	due by 12:30pm
Mon Sep 13, 2021	Assignment Reading: "The Power of Ethics" by Susan Liataud (pp. 151-223)	due by 8am
	Calendar Event BIO_SC-3002H Student Hours	2pm to 3pm
Wed Sep 15, 2021	Calendar Event Private Office Hour	9:30am to 10:30am
Thu Sep 16, 2021	Assignment In-person Class (16 Sept): Genetics and Evolution	due by 12:30pm
Fri Sep 17, 2021	Assignment Week 4 Quiz: Mendelian genetics and evolution	due by 9pm
	Assignment Reading: "Imbeciles" by Adam Cohen (pp 1-102)	due by 8am

Date	Details	Due
Mon Sep 20, 2021	Assignment Week 4: 'Reflection on Ethics in Critical Thought' online Discussion	due by 8am
	Calendar Event BIO SC-3002H Student Hours	2pm to 3pm
Tue Sep 21, 2021	Assignment In-person Class (21 Sept): Eugenics & Carrie Buck (Part 1)	due by 12:30pm
Wed Sep 22, 2021	Calendar Event Private Office Hour	9:30am to 10:30am
Sun Sep 26, 2021	Assignment 'The Eugenics Crusade' - PBS, American Experience	due by 8am
Mon Sep 27, 2021	Assignment Reading: "Imbeciles" by Adam Cohen (pp 103-211)	due by 8am
	Assignment Week 5 Discussion: A Reflective Application	due by 8am
	Calendar Event BIO SC-3002H Student Hours	2pm to 3pm
Wed Sep 29, 2021	Calendar Event Private Office Hour	9:30am to 10:30am
	Assignment Week 6 Quiz: "Imbeciles" (pp. 1-211)	due by 5pm
Thu Sep 30, 2021	Assignment In-person Class (30 Sept): Eugenics & Carrie Buck (Part 2)	due by 12:30pm
Mon Oct 4, 2021	Assignment Reading: "Imbeciles" by Adam Cohen (pp. 212-324)	due by 8am
	Assignment Team Collaboration Plan	due by 8am
	Calendar Event BIO SC-3002H Student Hours	2pm to 3pm
Tue Oct 5, 2021	Assignment In-person Class (5 Oct): 'Post-mortem Discussion of "Imbeciles" '	due by 12:30pm
	Assignment Post-Mortem of Imbeciles: Your written thoughts/ideas	due by 12:30pm
Wed Oct 6, 2021	Calendar Event Private Office Hour	9:30am to 10:30am
Thu Oct 7, 2021	Assignment In-person Class (7 Oct): Nazi Ideology, Science & Eugenics (Part 1)	due by 12:30pm
Fri Oct 8, 2021	Assignment Debate Project: Stage I, Weeks 3-7	due by 9pm
Mon Oct 11, 2021	Assignment Reading: "Social Mendelism" by Amir Teicher (pp. 1-124)	due by 8am
	Calendar Event BIO SC-3002H Student Hours	2pm to 3pm
Tue Oct 12, 2021	Assignment In-person Class (12 Oct): Debate Project - Check-in	due by 12:30pm
Wed Oct 13, 2021	Calendar Event Private Office Hour	9:30am to 10:30am
	Assignment Week 8 Quiz: Eugneics	due by 5pm

Date	Details	Due
Fri Oct 15, 2021	Assignment Prof. Amir Teicher Extra: 2NJB Podcast	due by 9pm
Mon Oct 18, 2021	Assignment Reading: "Social Mendelism" by Amir Teicher (pp. 125-231)	due by 8am
	Calendar Event BIO SC-3002H Student Hours	2pm to 3pm
Tue Oct 19, 2021	Assignment In-person Class (19 Oct): 'Post-mortem' Discussion of "Social Mendelism"	due by 12:30pm
	Assignment Post-mortem of 'Social Mendelism' - your written thoughts	due by 12:30pm
Wed Oct 20, 2021	Calendar Event Private Office Hour	9:30am to 10:30am
Thu Oct 21, 2021	Assignment In-person Class (21 Oct): American-Nazi Eugenic & Legal Axis (Part 1)	due by 12:30pm
Mon Oct 25, 2021	Assignment Reading: "Hitler's American Model" by James Whitman (pp. 1-72)	due by 8am
	Calendar Event BIO SC-3002H Student Hours	2pm to 3pm
Tue Oct 26, 2021	Assignment In-person Class (26 Oct): American-Nazi Eugenic & Legal Axis (Part 2)	due by 12:30pm
Wed Oct 27, 2021	Calendar Event Private Office Hour	9:30am to 10:30am
	Assignment Week 10: A Reflective Discussion on Race Laws	due by 5pm
Thu Oct 28, 2021	Assignment In-person Class (28 Oct): Debate Project/Narrative Summary - Check-in	due by 12:30pm
Mon Nov 1, 2021	Assignment Reading: "Hitler's American Model" by James Whitman (pp. 73-161)	due by 8am
	Calendar Event BIO SC-3002H Student Hours	2pm to 3pm
Wed Nov 3, 2021	Calendar Event Private Office Hour	9:30am to 10:30am
Thu Nov 4, 2021	Assignment In-person Class (4 Nov): The Molecular Era 'New Eugenics/Medical Eugenics' (Part 1)	due by 12:30pm
Fri Nov 5, 2021	Assignment Week 11 Quiz: Molecular Biology, Molecular Genetics & Gene Editing	due by 5pm
Mon Nov 8, 2021	Assignment Reading: "Editing Humanity" by Kevin Davies (pp. xi-102)	due by 8am
	Assignment Week 11 Team Debate Narrative Summary	due by 8am
	Calendar Event BIO SC-3002H Student Hours	2pm to 3pm
Tue Nov 9, 2021	Assignment In-person Class (9 Nov): Stage III Debate Work Discussion & Loose Ends	due by 12:30pm

Date	Details	Due
Wed Nov 10, 2021	Calendar Event Private Office Hour	9:30am to 10:30am
Thu Nov 11, 2021	Assignment In-person Class (11 Nov): The Molecular Era 'New Eugenics/Medical Eugenics' (Part 2)	due by 12:30pm
Mon Nov 15, 2021	Assignment 'Unnatural Selection' Parts 1 & 2- Netflix Assignment Reading: "Editing Humanity" by Kevin Davies (pp. 105-190)	due by 8am due by 8am
	Calendar Event BIO SC-3002H Student Hours	2pm to 3pm
Tue Nov 16, 2021	Assignment Gene Editing Lecture (16 Nov)	due by 1:45pm
Wed Nov 17, 2021	Calendar Event Private Office Hour	9:30am to 10:30am
Thu Nov 18, 2021	Assignment In-person Class (18 Nov): The Molecular Era 'New Eugenics/Medical Eugenics' (Part 3)	due by 12:30pm
Mon Nov 22, 2021	Calendar Event BIO SC-3002H Student Hours	2pm to 3pm
Wed Nov 24, 2021	Calendar Event Private Office Hour	9:30am to 10:30am
Mon Nov 29, 2021	Assignment 'Unnatural Selection' Parts 3 & 4- Netflix Assignment Reading: "Editing Humanity" by Kevin Davies (pp. 193-367)	due by 8am due by 8am
	Calendar Event BIO SC-3002H Student Hours	2pm to 3pm
Wed Dec 1, 2021	Calendar Event Private Office Hour	9:30am to 10:30am
	Assignment Week 14 Debate Position Paper	due by 5pm
Thu Dec 2, 2021	Assignment Week 14 In-Person Discussion: A Reflective Discussion on CRISPR, 'Gene Editing,' and 'New Eugenics/Medical Eugenics'	due by 12:30pm
Mon Dec 6, 2021	Calendar Event BIO SC-3002H Student Hours	2pm to 3pm
Wed Dec 8, 2021	Calendar Event Private Office Hour	9:30am to 10:30am
Thu Dec 9, 2021	Assignment Week 15 Oral Debates	due by 1:45pm
Sun Dec 12, 2021	Assignment Week 15: A Reflection on 'Genetic Engineering: Miracle for Humanity or New Pathway to Eugenics?'	due by 5pm
Wed Dec 15, 2021	Calendar Event Private Office Hour	9:30am to 10:30am
January 2022		