



PHIX2060

Bioethics and Biotechnology

Session 2, Online-flexible 2023

Department of Philosophy

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General Information

Unit convenor and teaching staff

Convenor, Lecturer

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By appointment

Lecturer

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Tutor

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Online Tutor

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Credit points

10

Prerequisites

40cp at 1000 level or above

Corequisites

Co-badged status

Unit description

This unit introduces students to a selection of the most pressing ethical questions and concerns raised by current and recent developments in the so-called 'biotech revolution', especially in the sphere of genetic technology. The first section of the unit provides an introduction to ethical reasoning, to issues of social justice and to the relationship between social values, scientific enquiry and research ethics in the context of biotechnology. The second section focuses on the ethics of gene technology in the spheres of human medicine and reproduction, including: genetic screening/testing; gene editing and therapies; genetic enhancement; and human reproductive cloning. In the third section we explore the impact of biotechnologies on other aspects of human, non-human animal and environmental welfare including: genetic engineering of plants and animals (GMOs); biofortification of food; bio-prospecting; and commercial exploitation of human genetic material. The unit is an ethics unit, not a science unit, and prior scientific knowledge is not required.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

Learning Outcomes

On successful completion of this unit, you will be able to:

ULO1: demonstrate a sound understanding of the major ethical issues posed by specific biotechnological advances.

ULO3: develop and apply skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences

ULO2: analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literature.

ULO4: construct sound arguments in support of your own ethical positions, judgements and values.

ULO5: Express in written communication with improved clarity of thought, expression, and argumentation.

General Assessment Information

Detailed assessment information and rubrics

Detailed information about each of the assessments, including rubrics and submission instructions will be available in the Assessment block in iLearn. Please make sure you read the assessment information carefully. Assessment forums for each assessment will be available on the unit iLearn – if you have an assessment question please check the assessment information

and the relevant assessment forum to see if your question has already been answered. If not, please post your question on the assessment forum where it will be answered within 1-2 days (weekdays). Please do not email your tutor unless you have tried all the above sources and cannot find an answer to your question.

Essay Option One or Essay Option Two – What does this mean?

In this unit students must choose ONE of two possible dates to submit their essay. You do not need to advise your tutor or the unit convenor: you simply choose whether to submit half way through the unit, or at the end of the unit. Essay questions for the first essay option will relate to the first half of the unit; essay questions for the second essay option will relate only to the second half of the unit. Students may only submit ONE essay; no re-tries are permitted. Essay questions will be released four weeks prior to each due date. Please NOTE the following when selecting your essay submission date:

- Students selecting Essay Option Two will NOT have received their essay mark or feedback prior to the final examination in this unit.
- Students are not at a disadvantage if they submit their essay for Essay Option One, in spite of having completed only half the unit at that time. Essay questions require knowledge only of the topics covered in the first half of the unit, and student essay results are not generally better at the end of semester.
- Please consider the fact that you may have several assessments due in other units at the end of semester'
- Please consider the fact that you will need to study for an Examination in this unit at the end of semester, which will require you to answer questions from topics covered across the whole unit.

Special Consideration

Requests for extensions must be submitted via a Special Consideration request, which is available in the <http://ask.mq.edu.au> portal. Your request should be submitted **no later than five days after the due date** and will need to be accompanied by appropriate supporting documentation. Please see the Special Consideration policy in the list of policies at the end of this document for further details. Read the policy closely as your request may be turned down if you have not followed procedure, or if you have not submitted a request in a timely manner.

Late Submission Penalty

Unless a Special Consideration request has been submitted and approved, **a 5% penalty (of the total possible mark) will be applied each day a written assessment is not submitted**, up until the 7th day (including weekends). After the 7th day, a mark of '0' (zero) will be awarded even if the assessment is submitted. Submission time for all written assessments is set at 11.55pm. A 1-hour grace period is provided to students who experience a technical issue. This late penalty will apply to written reports and recordings only. Late submission of time sensitive tasks (such as tests/exams, performance assessments/presentations, scheduled practical assessments/labs) will be addressed by the unit convenor in a Special consideration application.

Academic Integrity

Academic honesty is taken very seriously, and a range of methods, including but not restricted to the use of Turnitin, are used to detect plagiarism. Misrepresenting someone else's work as your own may be grounds for referral to the Faculty Disciplinary Committee. If you have questions about how to properly cite work or how to credit sources, please ask the convenor for help and see also the Academic Integrity Policy <https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/academic-integrity>

Note: All assignments in this unit are individual assignments. Collusion (unauthorised collaboration on individual assignments) is a breach of the Academic Integrity Policy. If in doubt, contact a member of teaching staff.

A helpful resource if you would like to know more about referencing and avoiding plagiarism is Macquarie's Academic Integrity Module, available here: <https://students.mq.edu.au/support/study/skills-development>. You will need to complete this Module before accessing the unit content, if you have not already done so. More information is available in iLearn.

What about ChatGPT?

Information about this unit's policy on the use of AI will be made available in the Assessment block in iLearn. Please check that information and contact the convenor if you have any questions.

Academic Writing and Study Support

Macquarie University offers a number of services to help with academic writing, referencing and study skills. For details, see: <https://students.mq.edu.au/support/study/skills/assignments>

For information about policies related to Assessment, see *Policies and Procedures* section below.

Assessment Tasks

Name	Weighting	Hurdle	Due
Online intro and film reflection	10%	No	11.55pm Sunday 6 Aug
Online quizzes	20%	No	11.55pm on Sunday of each week (Weeks 3-12 only)
Active Participation and Engagement	15%	No	Continuous, due 11.55pm Sunday of each topic week
Essay	30%	No	EITHER 11.55pm Sunday 17 Sept OR 11.55pm Sunday 5 Nov
Online examination	25%	No	University Examinations Period

Online intro and film reflection

Assessment Type ¹: Participatory task

Indicative Time on Task ²: 2 hours

Due: **11.55pm Sunday 6 Aug**

Weighting: **10%**

Students introduce themselves online and post a brief reflection on the film in Lecture 1

On successful completion you will be able to:

- demonstrate a sound understanding of the major ethical issues posed by specific biotechnological advances.
- develop and apply skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences
- Express in written communication with improved clarity of thought, expression, and argumentation.

Online quizzes

Assessment Type ¹: Quiz/Test

Indicative Time on Task ²: 20 hours

Due: **11.55pm on Sunday of each week (Weeks 3-12 only)**

Weighting: **20%**

10 online quizzes

On successful completion you will be able to:

- demonstrate a sound understanding of the major ethical issues posed by specific biotechnological advances.
- analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literature.
- Express in written communication with improved clarity of thought, expression, and argumentation.

Active Participation and Engagement

Assessment Type ¹: Participatory task

Indicative Time on Task ²: 15 hours

Due: **Continuous, due 11.55pm Sunday of each topic week**

Weighting: **15%**

Students actively participate in 70% of online discussion boards demonstrating familiarity with readings and contributing actively to discussions.

On successful completion you will be able to:

- demonstrate a sound understanding of the major ethical issues posed by specific biotechnological advances.
- develop and apply skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences
- construct sound arguments in support of your own ethical positions, judgements and values.
- Express in written communication with improved clarity of thought, expression, and argumentation.

Essay

Assessment Type ¹: Essay

Indicative Time on Task ²: 30 hours

Due: **EITHER 11.55pm Sunday 17 Sept OR 11.55pm Sunday 5 Nov**

Weighting: **30%**

Students complete a 1500 word argumentative essay.

On successful completion you will be able to:

- demonstrate a sound understanding of the major ethical issues posed by specific biotechnological advances.
- develop and apply skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences
- analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literature.
- construct sound arguments in support of your own ethical positions, judgements and values.

- Express in written communication with improved clarity of thought, expression, and argumentation.

Online examination

Assessment Type ¹: Examination

Indicative Time on Task ²: 25 hours

Due: **University Examinations Period**

Weighting: **25%**

Students complete a 1.5hr timed online examination during the Examinations period.

On successful completion you will be able to:

- demonstrate a sound understanding of the major ethical issues posed by specific biotechnological advances.
- develop and apply skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences
- analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literature.
- construct sound arguments in support of your own ethical positions, judgements and values.
- Express in written communication with improved clarity of thought, expression, and argumentation.

¹ If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Writing Centre](#) for academic skills support.

² Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

NOTE: It is expected that students will attend/listen to ALL LECTURES and will complete ALL ASSESSMENT COMPONENTS in this unit. You do not need to have passed each assessment to pass the unit, but it is expected that all assessments are attempted. The final examination will cover all sections of the unit.

General Submission Procedure: Written assessments must be submitted via TurnItIn at the correct link provided on the Unit iLearn site. You may only make ONE submission for each assessment, and you will NOT be able to view your TurnItIn match similarity report for your assessment before you submit it. You must ensure that you use the correct link for your assessment, and that you upload the correct final version of your assessment. No re-submissions will be permitted.

DELIVERY:

Lectures in this unit will be in-person (on-campus) with recordings available online via Echo360 and the unit iLearn site.

Online forums for weekly discussions are located on the unit iLearn site under each week's topic.

READING: All required readings are available in Leganto on the unit iLearn site. Supplementary reading is required for Essays. Suggestions for Supplementary Reading will be provided in lectures and on iLearn.

Unit Schedule

SECTION I: (WEEKS 1–5) FRAMEWORKS FOR AN ETHICS OF BIOTECHNOLOGY

WEEK 1 (beginning July 24): What is ethics? What is ethical reasoning? (A/Prof Lotz)

Required reading:

Cohen, S.: 'What is Ethics?'

- **No Online Forum Discussion Exercises** in Week 1.

WEEK 2 (beginning July 31): How can ethical theories help us think about bioethics and biotechnology? (A/Prof Lotz)

Part I: Consequentialist and Autonomy-based ethics.

Required reading:

Thomson, A.: 'Moral Principles and Moral Theories'.

Grace, D. and Cohen, S.: Chapter 1 pp.15-20, sections on 'Consequentialism' and 'Nonconsequentialism' in *Business Ethics: Problems and Cases*.

- **Online Discussion Exercise due: by 11.55pm Sunday 6 August.**

WEEK 3 (beginning Aug 7): How can ethical theories help us think about bioethics and biotechnology? (A/Prof Lotz)

Part II: Rights-based, Virtue-based, and Care-based ethics.

Required reading:

Rachels, J. Chapter 11, 'Feminism and the Ethics of Care', pp. 133-142.

Grace, D and Cohen, S.: Chapter 1 pp.21-24, section on 'Virtue Ethics' in *Business Ethics: Problems and Cases*.

WEEK 4 (beginning Aug 14): Does biotech have lessons to learn from eugenic history? (A/Prof Lotz)

Required reading:

Wikler, D. and Barondess, J. 'Bioethics and Anti-Bioethics in Light of Nazi Medicine: What Must We Remember?'

Buchanan, A. et al: Excerpt from 'Eugenics and Its Shadow'

Optional additional reading:

Buchanan, A. et al: Excerpt from 'Genes, Justice and Human Nature.'

WEEK 5 (beginning Aug 21): How do we do ethical science and research? (Prof Lipworth)

Required reading:

Emanuel, E *et al.* 'What Makes Clinical Research Ethical?' *Journal of the American Medical Association (AMA)*, Vol. 283, No. 2 May24/31: 2701-2711.

Glass, B. 'The Ethical Basis of Science.'

SECTION II (WEEKS 6–10): BIOTECHNOLOGY IN HUMAN HEALTH AND REPRODUCTION

WEEK 6 (beginning Aug 28): Human embryo research – Do human embryonic stem cells have moral status? What about synthetic embryos [SHEEFs]? (A/Prof Lotz)

Required reading:

Harris, J. 'Stem Cells, Sex and Procreation'

Pera, M. et al. 'What if stem cells turn into embryos in a dish?'

Optional additional reading:

Aach J. et al. 'Addressing the ethical issues raised by synthetic human entities with embryo like features'. *eLife* 2017;6: e20674. DOI: 10.7554/eLife.20674

WEEK 7 (beginning Sept 4): Would anything be wrong with human cloning for procreative purposes? (A/Prof Lotz)

Required reading:

Brock, D. 'Cloning Human Beings: An Assessment of the Ethical Issues Pro and Con.'

Optional additional reading:

Holm, S. 'A Life in the Shadow: One Reason Why We Should Not Clone Human Beings.'

Kass, L. 'The Wisdom of Repugnance.'

MONDAY 11 SEPT – FRIDAY 22 SEPT (inclusive): MID SEMESTER BREAK

- **ESSAY OPTION 1 DEADLINE: 11.55pm Sunday 17 September**

WEEK 8 (beginning Sept 25): Genetic screening, testing and diagnosis – Is it always better to know? (Prof Lipworth)

Required reading:

Clarke, A. 'Genetic Screening and Counselling.'

Steinbock, B. 'Preimplantation Genetic Diagnosis and Embryo Selection.'

WEEK 9 (beginning Oct 2): Should we edit the human genome for future generations? (Prof Lipworth)

- **No Online Forum Discussion Exercises** in Week 9.

Required reading:

Chadwick, R. 'Gene Therapy.'

Smolensky, S. 'CRISPR/Cas9 and Germline Modification: New Difficulties in Obtaining Informed Consent'

Optional additional reading:

Elias, S. and Annas, G.: 'Somatic and Germline Gene Therapy.'

Warren, MA. 'The Moral Status of the Gene.'

WEEK 10 (beginning Oct 9): If genetic therapy is ok, what about genetic enhancement?(Prof Lipworth)

Required reading:

Singer, P. 'Parental Choice and Human Improvement'.

Ter Meulen, R *et al*: 'Ethical Issues of Enhancement Technologies'.

Optional additional reading:

Resnik, D and Vorhaus, D. 'Genetic Modification and Genetic Determinism'.

SECTION III (WEEKS 11-12): BIOTECHNOLOGY IN WIDER CONTEXT – COMMERCE AND FOOD

WEEK 11 (beginning Oct 16): Should human genes be privately ownable and commercially exploitable? (Prof Lipworth)

Required reading:

Chadwick, R. and Hedgecoe, A. 'Commercial Exploitation of the Human Genome'

Optional additional reading:

Munzer, S. 'Property, Patents and Genetic Material'

WEEK 12 (beginning Oct 23): Synthetic and food biotechnology: Solving environmental and food scarcity problems? (Prof Lipworth)

Required reading:

Scott, D. 'The Technological Fix Criticisms and the Agricultural Biotechnology Debate'

Rogers, W. 'Ethical Issues in Synthetic Biology: A Commentary'

Optional additional reading:

Thompson, P. 'Ethical Issues in Food Biotechnology'

Week 13: (beginning Oct 30): Writing/Exam Preparation Week

- No tutorials/SGTAs this week
- **ESSAY OPTION 2 DEADLINE: 11.55pm Sunday 5 November**

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies \(https://students.mq.edu.au/support/study/policies\)](https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au) and use the [search tool](#).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/student-conduct>

Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

Student Services and Support

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support including information about finances, tenancy and legal issues](#)
- [Student Advocacy](#) provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via [AskMQ](#), or contact [Service Connect](#).

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

Changes from Previous Offering

Changes to topics and readings. Removal of timed online test, replaced by 10 online quizzes.