



CBMS807

Bioethics and Biotechnology

S2 Day 2019

Dept of Molecular Sciences

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General Information

Unit convenor and teaching staff

Unit Convenor and Lecturer

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By appointment

Credit points

4

Prerequisites

Admission to MBiotech or MBiotechMCom or MBioBus or MSc or MPH or MScInnovation or HSYP801 or HSYP802

Corequisites

Co-badged status

Unit description

This unit introduces students to ethical issues raised by current developments in biotechnology, especially in the sphere of genetic technology. Topics include the ethics of genetic technology in human medicine and reproduction, including genetic screening/testing; genetic therapies (somatic and germ-cell); genetic enhancement; and cloning; and the impact of biotechnology on other aspects of human, animal and environmental well-being. Students develop a firm grounding in the ethical principles, theories and frameworks with which to analyse a variety of biotechnological applications, in addition to the requirements of scientific and academic conduct and the carrying out of responsible research.

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:

1. Understand and explain the major ethical issues posed by specific biotechnological advances;
2. Understand and explain the central ethical concepts, principles and theories that arise in debates concerning the applications of biotechnological developments;
3. Analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literatures;
4. Apply the skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences;
5. Construct clear and rigorous arguments in support of your own ethical positions and values;
6. Apply enhanced skills in clarity of thought, clarity of oral and written expression, and written argumentation.

General Assessment Information

NOTE: It is expected that students 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.

General Submission Procedure: Essays and presentations (if applicable) must be submitted via TurnItIn at the correct link provided on the Unit iLearn site. Please note that there will be separate links for CBMS807 and PHL260 students. Please ensure that you use the correct link for your assessment!

Extensions: Extensions must be sought via the MQ Special Consideration application

procedure, in advance of the due date. Extensions will only be granted for medical or equivalent reasons, supported by documentation (medical certificate or equivalent). Please note that workload in other units, and employment outside of university, will not be accepted as grounds for an extension.

LATE SUBMISSION POLICY: Unless a Special Consideration request has been submitted and approved, the following will apply:

(a) Late penalty – two (2) marks out of 100 will be deducted per day for assignments submitted after the due date;

(b) No assignment will be accepted more than seven (7) days (incl. weekends) after the original submission deadline. (c) No late submissions will be accepted for timed assessments – i.e. online test and examination.

Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Online post</u>	5%	No	7 Aug, 10am
<u>Timed Online Test</u>	20%	No	28 Aug
<u>Essay</u>	25%	No	20 Sept OR 8 Nov (11.59pm)
<u>Essay Self-Assessment</u>	10%	No	With your essay
<u>Participation</u>	15%	No	Continuous
<u>Exam</u>	25%	No	University examinations period

Online post

Due: **7 Aug, 10am**

Weighting: **5%**

Individual introduction PLUS reflection on film in Week 1.

Post a message on the iLearn Discussion Board for this Unit, containing the following: (i) Begin by introducing yourself. Include the following information: Name (and nickname or preferred name); Where you are from (locally or internationally); What you are studying at university (subjects, not degree); Why you are studying this unit/what you hope to get out of it. (ii) Then add a comment about one or two of the issues or questions that you felt were raised by the film from Lecture 1.

This task will be assessed according to the following criteria: Evidence of engagement with film; relevance of issue identified in film; clarity of expression. A marking rubric and detailed task outline for this task will be supplied on the iLearn homepage.

On successful completion you will be able to:

- 1. Understand and explain the major ethical issues posed by specific biotechnological advances;
- 2. Understand and explain the central ethical concepts, principles and theories that arise in debates concerning the applications of biotechnological developments;
- 3. Analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literatures;
- 4. Apply the skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences;
- 6. Apply enhanced skills in clarity of thought, clarity of oral and written expression, and written argumentation.

Timed Online Test

Due: **28 Aug**

Weighting: **20%**

60-minute timed online test: case study application of emerging skills.

The test is designed to assess your ability to identify ethical principles and apply an ethical style of reasoning and argument to a case study.

The test will be accessible for 24 hours **from 9AM WEDNESDAY 28 AUGUST until 9AM THURSDAY 29 AUGUST**. You **MUST** complete the test within that time. You will have **ONLY ONE OPPORTUNITY** to commence and complete the test, within the 60 minutes allowable time. Further information will be provided in class.

This task will be assessed according to the following criteria: demonstration of familiarity with unit content and readings; understanding of core theories to be examined; quality of analysis in application of theories to case study. A marking rubric and detailed task outline for this task will be supplied on the iLearn homepage.

On successful completion you will be able to:

- 1. Understand and explain the major ethical issues posed by specific biotechnological advances;
- 2. Understand and explain the central ethical concepts, principles and theories that arise in debates concerning the applications of biotechnological developments;
- 3. Analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literatures;
- 4. Apply the skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences;
- 6. Apply enhanced skills in clarity of thought, clarity of oral and written expression, and

written argumentation.

Essay

Due: **20 Sept OR 8 Nov (11.59pm)**

Weighting: **25%**

The essay task is designed to test your ability to engage with an ethical issue in depth. Essay writing tests your ability to express, analyse and organise key ideas clearly and systematically, and to develop an argument in a sustained way. All students will be required to submit one essay (word length: 1800 words.) Essay topics will be distributed at least one month before each due date, and will be available on the unit iLearn. You may choose whether to do the first or the second essay (ie Sept or Nov deadline), but you may only select from the relevant question sets (ie first batch of questions for Sept deadline, second batch of questions for Nov deadline).

This task will be assessed according to the following criteria: Mechanics (length, structure, written expression); Comprehension (clear, detailed and accurate exposition of main points); Critical Analysis (quality of evaluation of strengths and weaknesses in examined positions/arguments; development of well supported critical analysis and conclusion of your own); and Sources (relevance and proper citation practices). A marking rubric and detailed task outline for this task will be supplied on the iLearn homepage.

On successful completion you will be able to:

- 1. Understand and explain the major ethical issues posed by specific biotechnological advances;
- 2. Understand and explain the central ethical concepts, principles and theories that arise in debates concerning the applications of biotechnological developments;
- 3. Analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literatures;
- 4. Apply the skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences;
- 5. Construct clear and rigorous arguments in support of your own ethical positions and values;
- 6. Apply enhanced skills in clarity of thought, clarity of oral and written expression, and written argumentation.

Essay Self-Assessment

Due: **With your essay**

Weighting: **10%**

Complete and submit (with your essay, but in a separate submission) a self-assessment of your essay, using the essay rubric and criteria and including a short (1-2 paragraphs) general statement addressing the following points: (i) what you regard to be the strengths in your essay;

(ii) where you can see weaknesses and/or room for improvement; (iii) questions, issues or aspects of the task that you had special difficulties with.

NOTE: This must be submitted separately to the essay, via the Essay Self-assessment submission link in iLearn. Please use the essay marking rubric provided on iLearn under 'Assessment' as the guide for your self-assessment. Further details will be provided in classes and on iLearn.

This task will be assessed according to the following criteria: Quality, clarity and accuracy of self-assessment. The essay marking rubric and task outline for this task will be supplied on the iLearn homepage.

On successful completion you will be able to:

- 4. Apply the skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences;
- 6. Apply enhanced skills in clarity of thought, clarity of oral and written expression, and written argumentation.

Participation

Due: **Continuous**

Weighting: **15%**

You must participate in **80% (8/10) of the tutorials** and contribute to the discussions, including by asking and answering questions.

This task will be assessed according to the following criteria: Engagement; Quality of contributions; Demonstration of familiarity with topic and readings. A marking rubric and detailed task outline for this task will be supplied on the iLearn homepage.

On successful completion you will be able to:

- 1. Understand and explain the major ethical issues posed by specific biotechnological advances;
- 2. Understand and explain the central ethical concepts, principles and theories that arise in debates concerning the applications of biotechnological developments;
- 3. Analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literatures;
- 4. Apply the skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences;
- 5. Construct clear and rigorous arguments in support of your own ethical positions and values;
- 6. Apply enhanced skills in clarity of thought, clarity of oral and written expression, and written argumentation.

Exam

Due: **University examinations period**

Weighting: **25%**

Short **compulsory** closed book examination (1.5 hours) will be held in the examination period at the end of semester and is designed to test your general familiarity with the main ideas and issues covered in the lectures, tutorials and readings. It will consist of closed-book, mini-essay questions.

This task will be assessed according to the following criteria: Demonstration of familiarity with unit content and readings. A marking rubric and detailed task outline for this task will be supplied on the iLearn homepage.

On successful completion you will be able to:

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- 2. Understand and explain the central ethical concepts, principles and theories that arise in debates concerning the applications of biotechnological developments;
- 4. Apply the skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences;
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- 6. Apply enhanced skills in clarity of thought, clarity of oral and written expression, and written argumentation.

Delivery and Resources

There will be one 2-hour lecture per week, and for internal students, one 1-hour tutorial per week.

Please check Timetables for confirmation of days/times and venues.

While the contact hours are fewer in this unit than for other CBMS units, students are expected to complete 3.5 hours of compulsory reading and private study per week in this unit, *additional to* lecture and tutorial attendance and any essay/test/exam preparation time.

REQUIRED READING: All required reading in this unit can be found in the PHL260/CBMS807 Bioethics and Biotechnology unit reader, available via online order (Print On Demand). Please use the link on the unit iLearn site to order your copy. Please do not delay with ordering your copy, as there can be delays and there is a test in Week 5 so you will need to have purchased your own copy of the Reader well in advance of that.

The readings contained in the Reader are **compulsory** reading for this unit. You will be expected to keep up with the readings throughout semester, and tutorial discussion will presume prior

familiarity with the relevant readings.

RECOMMENDED READING: A list of Additional Readings, for use for your essays, exam study and as supplementary reading throughout the semester, is available via Leganto at the MQ Uni Library (see instructions and link on the unit iLearn).

Unit Schedule

SCHEDULE OF CLASSES AND REQUIRED READINGS

Note: The following are REQUIRED readings for this unit. Unless otherwise specified, all readings listed below are in the Unit Reader. Where more than one reading is listed priority is to be given to reading(s) marked ‘’.*

SECTION I: (WEEKS 1–5) FRAMEWORKS FOR ETHICAL REASONING

TOPIC 1 WEEK 1 (July 31): Introduction/overview of course. Introducing the process and principles of ethical reasoning.

Reading:

*Stephen Cohen: ‘What is Ethics?’

*James Rachels: ‘What is Morality?’

NOTE: NO TUTORIALS in Week 1

TOPIC 2 WEEK 2 (Aug 7): Overview of key moral theories and their applications to issues in biotechnology.

Reading:

* Damian Grace and Stephen Cohen: Excerpt from *Business Ethics: Problems and Cases*.

* Anne Thomson: ‘Moral Principles and Moral Theories’.

NOTE: Online Discussion Exercise due: by 10am today.

TOPIC 3 WEEK 3 (Aug 14): The role of ethics and social values in science

Reading:

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

* Glass: ‘The Ethical Basis of Science.’

TOPIC 4 WEEK 4 (Aug 21): The moral legacy of eugenics and key principles of justice in biotechnology.

Reading:

- * Buchanan et al: Excerpt from 'Eugenics and Its Shadow'
 - * Wikler and Barondess: 'Bioethics and Anti-Bioethics in Light of Nazi Medicine: What Must We Remember?'
- Buchanan et al: Excerpt from 'Genes, Justice and Human Nature.'

WEEK 5 (Aug 28): TIMED ONLINE TEST: Must be completed within 24 hours from 9AM WEDNESDAY 28 AUGUST until 9AM THURSDAY 29 AUGUST.

NOTE: NO LECTURE OR TUTORIALS this week

SECTION II (WEEKS 6–10): GENETIC TECHNOLOGY IN THE SPHERE OF HUMAN HEALTH AND REPRODUCTION

TOPIC 5 WEEK 6 (Sept 4): Guest Lecturer: Dr Katrina Hutchison – Ethical issues posed by genetic screening, testing and diagnosis

Reading:

- * Clarke: 'Genetic Screening and Counselling.'
- * Steinbock: 'Preimplantation Genetic Diagnosis and Embryo Selection.'

TOPIC 6 WEEK 7 (Sept 11): Stem cell research and the moral status of human embryonic stem cells.

Reading:

- * Harris: 'Stem Cells, Sex and Procreation'

MONDAY 16 SEPT – FRIDAY 27 SEPT (inclusive): MID SEMESTER BREAK

*** ESSAY OPTION 1 DEADLINE: 11.59pm Friday 20 September**

TOPIC 7 WEEK 8 (Oct 2): Would it be morally permissible to clone human beings for procreative purposes?

Reading:

- * Brock: 'Cloning Human Beings: An Assessment of the Ethical Issues Pro and Con.'
- Holm: 'A Life in the Shadow: One Reason Why We Should Not Clone Human Beings.'
- Kass: 'The Wisdom of Repugnance.'

TOPIC 8 WEEK 9 (Oct 9): The ethics of somatic and germline genetic therapy

Reading:

- * Chadwick: 'Gene Therapy.'
- * Smolensky: 'CRISPR/Cas9 and Germline Modification: New Difficulties in Obtaining Informed Consent' [available on the unit iLearn under 'Week 8' and via Leganto]
- Elias and Annas: 'Somatic and Germline Gene Therapy.'
- Warren: 'The Moral Status of the Gene.'

TOPIC 9 WEEK 10 (Oct 16): Guest lecture: Professor Wendy Rogers – The moral acceptability of genetic enhancement and the therapy/enhancement distinction

Reading:

- * Peter Singer: 'Parental Choice and Human Improvement'.
- * Ruud Ter Meulen *et al*: 'Ethical Issues of Enhancement Technologies'.
- David Resnik and Daniel B. Vorhaus: 'Genetic Modification and Genetic Determinism'.

SECTION III (WEEKS 11-12): THE SOCIAL AND ENVIRONMENTAL IMPLICATIONS OF BIOTECHNOLOGY

TOPIC 10 WEEK 11 (Oct 23): Ethical issues posed by commercialisation of human genetic material

Reading:

- * Chadwick and Hedgecoe: 'Commercial Exploitation of the Human Genome'
- Munzer: 'Property, Patents and Genetic Material'

TOPIC 11 WEEK 12 (Oct 30): Ethical and environmental issues in food biotechnology.

Reading:

- *Thompson: 'Ethical Issues in Food Biotechnology'
- *Scott: 'The Technological Fix Criticisms and the Agricultural Biotechnology Debate' [available on

the unit iLearn under 'Week 12' and via Leganto]

NB: The papers by Altieri & Rosset and McGloughlin in the Unit Reader are optional only.

*** ESSAY OPTION 2 DEADLINE: 11.59pm Friday 8 November**

SEMESTER ENDS – EXAMINATIONS BEGIN

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). 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](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#) (**Note:** *The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.*)

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

If you would like to see all the policies relevant to Learning and Teaching visit [Policy Central \(https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central\)](https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/study/getting-started/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

Student Support

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

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

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.

Graduate Capabilities

PG - Capable of Professional and Personal Judgment and Initiative

Our postgraduates will demonstrate a high standard of discernment and common sense in their professional and personal judgment. They will have the ability to make informed choices and decisions that reflect both the nature of their professional work and their personal perspectives.

This graduate capability is supported by:

Learning outcomes

- 1. Understand and explain the major ethical issues posed by specific biotechnological advances;
- 2. Understand and explain the central ethical concepts, principles and theories that arise

- in debates concerning the applications of biotechnological developments;
- 3. Analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literatures;
- 4. Apply the skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences;
- 5. Construct clear and rigorous arguments in support of your own ethical positions and values;
- 6. Apply enhanced skills in clarity of thought, clarity of oral and written expression, and written argumentation.

Assessment tasks

- Online post
- Timed Online Test
- Essay
- Essay Self-Assessment
- Participation
- Exam

PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

Learning outcomes

- 1. Understand and explain the major ethical issues posed by specific biotechnological advances;
- 2. Understand and explain the central ethical concepts, principles and theories that arise in debates concerning the applications of biotechnological developments;
- 3. Analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literatures;
- 4. Apply the skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences;
- 5. Construct clear and rigorous arguments in support of your own ethical positions and values;

Assessment tasks

- Timed Online Test

- Essay
- Essay Self-Assessment
- Participation
- Exam

PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

Learning outcomes

- 1. Understand and explain the major ethical issues posed by specific biotechnological advances;
- 2. Understand and explain the central ethical concepts, principles and theories that arise in debates concerning the applications of biotechnological developments;
- 3. Analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literatures;
- 4. Apply the skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences;
- 5. Construct clear and rigorous arguments in support of your own ethical positions and values;

Assessment tasks

- Online post
- Timed Online Test
- Essay
- Participation
- Exam

PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

Learning outcomes

- 3. Analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literatures;
- 4. Apply the skills and concepts involved in ethical reasoning and argumentation to past, current and future controversies in biotechnological and other sciences;

Assessment tasks

- Essay
- Exam

PG - Effective Communication

Our postgraduates will be able to communicate effectively and convey their views to different social, cultural, and professional audiences. They will be able to use a variety of technologically supported media to communicate with empathy using a range of written, spoken or visual formats.

This graduate capability is supported by:

Learning outcomes

- 1. Understand and explain the major ethical issues posed by specific biotechnological advances;
- 3. Analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literatures;
- 5. Construct clear and rigorous arguments in support of your own ethical positions and values;
- 6. Apply enhanced skills in clarity of thought, clarity of oral and written expression, and written argumentation.

Assessment tasks

- Online post
- Timed Online Test
- Essay
- Essay Self-Assessment
- Participation
- Exam

PG - Engaged and Responsible, Active and Ethical Citizens

Our postgraduates will be ethically aware and capable of confident transformative action in relation to their professional responsibilities and the wider community. They will have a sense of

connectedness with others and country and have a sense of mutual obligation. They will be able to appreciate the impact of their professional roles for social justice and inclusion related to national and global issues

This graduate capability is supported by:

Learning outcomes

- 1. Understand and explain the major ethical issues posed by specific biotechnological advances;
- 2. Understand and explain the central ethical concepts, principles and theories that arise in debates concerning the applications of biotechnological developments;
- 3. Analyse and critically evaluate relevant case studies and scientific contexts, as well as theories and arguments in the relevant literatures;
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Assessment tasks

- Online post
- Participation