Genomics, Ethics and Society: Notes for Instructors

Description

Teaching notes for the Course on Genomics, Ethics and Society.

Abstract

Background

This class was funded by NSF award 1237881, “Collaborative Research: Genomics, Ethics and Society – Exploring ethics, impacts and consequences of technological advances.” The PI was Penny Riggs in Animal Science at Texas A&M University and the Co-PI Clare Palmer in Philosophy at Texas A&M University. The proposal was to develop an online class in Genomics and Society, aimed at graduate students. The materials posted here form one major part of the deliverables for this proposal.

Who could use these materials

This course is intended to be interdisciplinary and to be adaptable to work with students at different levels. So the instructor or instructors could be from the sciences, social sciences or humanities, as could the students, and the materials can be adapted to emphasize particular disciplinary approaches if wanted. The class was designed both for use with graduates and undergraduates, and in its current form has instructions in place for teaching and assessing both undergraduates and graduates. The basic materials are the same both for undergraduates and graduates, but graduates have additional readings and assignments, and different

grading expectations. If you are teaching just undergraduates or just graduates, you should easily be able to adapt the course requirements accordingly. The materials would probably work best with fairly advanced undergraduates.

How you might use these materials

The course materials posted here are freely available under the terms of this NSF award; anyone may use them, adapt them, supplement them, or take parts of them to integrate into their own classes. Materials could be used to teach a whole course; individual units could be extracted and taught online as part of another course (perhaps when an instructor needs to travel during the semester); or parts of units (such as individual case studies) could be used in other classes. If you are using the content in one of the units 2-7, you might also find it helpful for students to look at all or part of unit 1, since that introduces some key value/ethical concept and also provides some guidance as to how to write up case studies, including a model case study.

Learning Management System: Blackboard.

The course was designed in the learning management system Blackboard, and is available on Blackboard's Coursesites page https://www.coursesites.com/webapps/Bb-sites-course-creation-BBLEARN/pages/index.html

The use of Blackboard has shaped the way the course was structured and managed. However, there are ways of extracting the course and inserting it into another learning management system, though some functionality will be lost. Please check with Blackboard or your learning management system provider if you wish to do this to find out the best way of transferring materials.

Course structure

The course begins with an introductory unit, Unit 1, which introduces some key ideas about genomics and ethics, and some guidance as to how to write up case

studies. This is followed by six units with content - Unit 2 on synthetic biology, Unit 3 on GM crops, Unit 4 on GM animals and cloning, Unit 5 on genomics and wildlife; Unit 6 on genomic therapy and human enhancement; and Unit 7 on Genomics and Privacy. Unit 8 is the final case study on human-animal xenotransplantation, which brings together several different areas of the course, and forms part of course assessment (see below).

The first 7 units of the course are designed to last two weeks. Each unit begins with some guidelines and what we've called an "Essential Question" – a question for students to consider throughout that unit. There's then a section of Background Material, which provides an introduction to the key social, ethical and policy issues relevant to the unit. Our "Selected Issues in Depth" section contains video clips from talks with speakers who are experts in the field, and develops one or more key issues relevant to the unit. Each unit also has a section of required and recommended readings, some of which are required for everyone, and some for graduate students only; and each unit also has a section of further resources (including useful websites, papers, you-tube videos).

Course Assessment

Of course, you can assess this class in any way you like. As we have set it up, however, it has various different forms of assessment.

a. Embedded in Blackboard we have an online discussion for each of units 2-7. For each online discussion we provided a "scenario" and some questions to get the discussion going. The goal of the discussion is for students to make multiple postings, showing knowledge of the readings and the material in the unit, and the grading rubric for the discussion aims to encourage them to do this. We asked everyone to post on the first day the discussion opened, and then to make at least two further posts. Of course, you can amend the grading rubric to fit what you want the discussion to do.
b. Units 2-8 also each contain a case-study, and this was a major form of assessment for undergraduates and part of the assessment for graduates. Lots of information about how to approach answering a case study in this course is provided in Unit 1. This includes an example case and model answer, and what we call an "Ethics Assessment Process" – a series of questions that help to

guide students to think both broadly and deeply about the ethical issues the case might raise. We required everyone to have written up three cases by the end of the class: two chosen from the cases in units 2-7, and the case study that constitutes the final unit, Unit 8.

c. Alongside discussions and case studies, we required graduate students to write a research paper (instructions can be found in the course materials). Where relevant the students were asked to write about an issue that relates to their own research.

Web conferencing with students:

Alongside the online discussions, it's recommended that you hold web conference meetings either every week or at least every unit with students taking the class. This format may initially be awkward, but it does allow students to see other students face to face and to respond to them immediately (of course, this will depend on how many students there are registered in the class, what time zones they are in, and what access to web conferencing software there is).

Good luck using the course. We hope it's helpful to you. Please feel free to contact Clare Palmer (c.palmer@tamu.edu) with any questions.

Rights

Use of Materials on the OEC

Resource Type

Instructor Materials

Parent Collection

Genomics, Ethics and Society Course

Discipline(s)

Genetics and Genomics
Teaching Ethics in STEM
Life and Environmental Sciences