BIO ENG 100 LEC 001 Fa13: Syllabus

Syllabus

Lecture 1 (Aug. 29): Class information and introductions.

Lecture 2 (Sept. 3): Introduction to Ethical Theories, the 4A's, and Debate Format. Greek and Roman philosophers, Virtue ethics, Religious ethics, Natural law theory, Social contract theory (Hobbes, Rawl), Rights ethics (Locke), Kantian ethics, Prima Facie Duties (Ross), Utilitarian ethics, Bentham's hedonistic calculus. Placing Karen Quinlan case in context of ethical theories. Debate format and strategies.

HW # 1 (Assigned Sept. 3, Due Sept. 10): Ethical Theories

Lecture 3, 4 (Sept. 5, 10): Ethics of Professional Conduct Professional conduct in science and engineering research and business: Plagiarism, falsifying data, scientific fraud; authorship, mentoring, peer review. Academia and industry: conflicts of interest and intellectual property. Case study of Jan Hendrik Schon.

Lecture 5 (Sept. 12): Ted Talks and discussion

Lecture 6 (Sept. 17): Corporate Ethics Company credos. Various case studies including Johnson & Johnson Tylenol tampering, Ford Pinto faulty fuel tank design, Odwalla E. coli tainted apple juice.

Lectures 7 (Sept. 19): Ethics of Information Technologies Ethical considerations of privacy, ownership, access, and community.

HW # 2 (Assigned Sept. 12, Due Sept. 24): Professional Conduct/Corporate Ethics/ Information Technologies

Lecture 8 (Sept. 24): Debate # 1: Professional Conduct/Corporate Ethics/ Information

Technologies (followed by review for Midterm #1 Exam)

Lecture 9 (Sept. 26): Midterm Exam #1: Lectures, HW, debates from Aug. 29-Sept. 24

Lectures 10, 11 (Oct. 1, 3): Ethics of Animal and Human Research. History of animal research, animal rights, animal welfare, human and Darwinian dominion, animal research standards and practice (the 3 or 5 R's). Various case studies including "Don't Fall in Love with your Monkey", Philadelphia Head-Injury Study on Primates. History of human research, ethical theories of autonomy, beneficence, justice, the Belmont Report, Institutional Review boards. Various case studies including Tuskagee study, Yellow Fever, Krieger lead paint studies.

Lecture 12, 13 (Oct. 8, 10): Ethics of Scarce Medical Technologies. The development of ethical frameworks for experimental vs. therapeutic medicine, scarcity of life intervention measures such as organ transplants, deceased and live organ transplants, xenografts, and artificial organs. Case studies of first heart transplant on Louis Washkansky, double organ transplant on Jesica Santillan, xenograft on Baby Fae, artificial heart transplant for Barney Clark and William Shroeder.

HW#3 (Assigned Oct. 1, Due Oct. 15): Animal and Human Research/Scarce Medical Technologies

Lecture 14 (Oct. 15): Debate #2: Animal and Human Research/Scarce Medical Technologies

Lecture 15, 16, 17 (Oct. 17, 22, 24): Modern Ethical Dilemmas: The Environment and Energy. Environmental ethical theories, Biosphere 2, energy demand and economic growth, energy sources and uses, energy and environmental consequences, facts and uncertainties about global climate change, solar, wind, biofuels as renewable energy sources, nuclear energy pros and cons, carbon capture and storage, hydrogen fuel technologies, geoengineering.

HW#4 (Assigned Oct. 15, Due Oct. 29): Ethics of Environment and Energy

Lecture 18 (Oct. 29): Debate #3: Ethics of Environment and Energy (followed by review for Midterm #2 Exam)

Lecture 19 (Oct. 31): Midterm Exam #2: Lectures, HW, debates from Oct. 1-Oct. 29

Lecture 21, 22 (Nov. 5, 7): Modern Ethical Dilemmas: Genetic Technologies. Fundamental molecular biology and genetics, technologies for genetic testing, the right to know or not know, what

molecular biology and genetics, technologies for genetic testing, the right to know or not know, what constitutes "disease", behavior and genetics, privacy and autonomy, eugenics. Assisted reproductive technologies (ART), preimplantation genetic diagnosis (PGD). Case studies of genetic testing for carpal tunnel syndrome, Zain Hashmi and PGD.