

BIOL88

COURSE DESCRIPTION

An interdisciplinary, multicultural and historical perspective of medicine focused primarily upon therapy and practice in order to achieve better consumer education for the general student body or public. Medicine is defined as the treatment of disease, and as a prerequisite to understanding therapy; it is necessary to view the whole spectrum of disease, its various causes and evolution over time.

Therapy can then be explored from the distinct categories psychological, physical and chemical methods. Human attempts to understand and deal with disease will be seen as evolving from the spiritual and mystical to the more rational and finally to the scientific thinking of the Renaissance and beyond. Even after hundreds of years of basic science knowledge, by 1900, therapy beyond the symptomatic (that which actually reduces morbidity or mortality) will be seen as severely limited to a few surgical techniques and a handful of botanical compounds. This will serve to highlight the incredible difficulties in treating major disease even after causes are understood.

History is a valuable tool for understanding the evolution of theories, knowledge and practices within medicine that can also demonstrate the many examples of myth, misconception and wishful thinking that have occurred along the way. The history of medicine begins prior to recorded human history and involves all human cultures. As the experiences of the Covid-19 pandemic and repeated public episodes of racist violence illustrate all too vividly, the history continues to be written. This class will touch on some of the major themes and important episodes of that history, but cannot cover it all. If there are topics or issues that particularly interest or concern you, please contact me so that we can discuss them.

This course is entirely online, and largely self-paced. However students are encouraged to attend office hours and correspond with the instructor.

COURSE INSTRUCTOR

Grant Hartzog

CLASS WEBSITE

This course is hosted on Canvas.

LEARNING OUTCOMES

By the end of the course, students should be able to:

1. View disease as vast, ancient spectrum of basically natural phenomena that can be categorized for better understanding.
2. Understand the basic causes of disease and their overlapping combinations.
3. Define the "art" of medicine within the context of a patient therapist relationship, the use of hope, faith and reassurance, expressions of caring and compassion, diagnostic pattern recognition and the subtle methods of history taking.
4. Understand the historic attempts to unravel the mysteries of disease with various theoretical models and numerous therapeutic methods that have over time come to be recognized as mere placebo.
5. Contrast the separate realms of holistic vs. reductionist thinking in the approach to disease and their differing effectiveness in terms of diagnosis or treatment.
6. View "western", "ethnic" or "alternative" medicine objectively from either positive or negative perspectives.
7. Understand basic mind-body interactions and the role of stress in disease.
8. Recognize the characteristics of pseudoscience as a tool for better consumer protection.
9. Speculate upon the future of medicine from within each of the distinct realms of psychological, physical or chemical therapies.
10. Appreciate the ethical dilemmas of placebo.

ASSIGNMENTS AND GRADING

The grade in this class will be assigned on the basis of weekly quizzes (10%), weekly written responses to reading assignments and subsequent discussions (40%), a take-home final exam (25%) and a presentation to the class (25%). All assignments can be found in the [modules](#).

READING ASSIGNMENTS

There will be weekly reading assignments, which can be found in the [modules](#). I will expect you to have completed the reading prior to class so that you will be able to participate fully in class discussions.

EXPECTED EFFORT

This is a 5 unit course, which means that you are expected to work an average of 15 hours per week on course activities. This effort includes 2 lectures (3.5 hours) per week, reading (~ 5 hours per week), writing assignments (2 hours per week), your final presentation and term paper (an average of 4 hours per week).

Course Summary:

WEEK 1: THE NATURAL HISTORY OF DISEASE

LECTURES

Treat these video lectures as you would treat an in-person lecture: Pay attention, take notes, and write down any questions you have for your instructor.

- What is Disease?
- How Did Disease Begin?
- Historical Patterns of Infectious Disease
- What Causes Disease?

READINGS

- Genes, Genomes, Genetics: A Primer (in Canvas)
- Emperor of All Maladies (in Canvas)
This reading from the Emperor of All Maladies discusses the genetic causes of cancer, focusing on oncogenes and tumor suppressor genes. You can think of these genes like the gas and brake pedals in a car. When you press on the gas (a mutation in an oncogene that activates it-that causes it to be more active than normal or to function when it should be off), the car goes faster (i.e., cells continue to grow and divide when they should not). Similarly, when the brake pedal is broken (a tumor suppressor gene is mutated), the care cannot slow down (cells continue to divide when they should not).
- Blood and Guts, pp. 1–20
- Epidemic Man (in Canvas)
This article reviews Plagues and Peoples, and outstanding book by historian William McNeil, which discusses the role of infectious diseases in human history.
- Germ History, episodes 1 and 2 (videos, links in Canvas)

DISCUSSION

- Introduce Yourself

QUIZ

Weekly Quizzes will test your understanding of key course material and concepts. You may take the quiz twice, and your higher score will be recorded.

WEEK 2: THE ORIGINS OF THERAPY

LECTURES

- The Origins of Therapy
- “I Shall Please”: The Placebo Response
- The Art of Medicine

READINGS

- What if the Placebo Effect Isn't a Trick? (in Canvas)
- Medicine: A History of Healing (Week 2) (in Canvas)
- The Placebo Response (Week 2) (in Canvas)
- Blood and Guts, pp. 21-25 and p 109

WRITING ASSIGNMENT

- Empathy and the Placebo Response

QUIZ

Weekly Quizzes will test your understanding of key course material and concepts. You may take the quiz twice, and your higher score will be recorded.

WEEK 3: EARLY SCHOOLS OF MEDICINE

LECTURES

- Early Schools of Medicine: Egypt
- Early Schools of Medicine: India
- Early Schools of Medicine: Greece
- Early Schools of Medicine: China
- Early Schools of Medicine: A Comparison

READINGS

- Medicine: A History of Healing (Week 3) (in Canvas)
- The Alarming History of Medicine (Week 3) (in Canvas)

WRITING ASSIGNMENT

- Ancient Diagnoses

QUIZ

Weekly Quizzes will test your understanding of key course material and concepts. You may take the quiz twice, and your higher score will be recorded.

WEEK 4: THE DARK AGES TO THE RENAISSANCE

LECTURES

- The Collapse of the Roman Empire
- Medicine in the Islamic World
- Malthusian Forces in the Middle Ages
- Anatomy in the Renaissance
- Surgery in the Renaissance

READINGS

- The Alarming History of Medicine (Week 4) (in Canvas)
 - The Microbe Hunters (Week 4) (in Canvas)
 - Medicine: A History of Healing (Week 4) (in Canvas)
 - Blood & Guts, pp. 109–117, 135–139
 - Medieval Parasites (Optional in Canvas)
 - Thucydides (Optional in Canvas)
- This selection from Thucydides classic text, The History of the Peloponnesian War, describes the effects of the plague of Athens, which marked the turning point in the war. This short reading will give you a sense of just how devastating ancient plagues could be.*

WRITING ASSIGNMENT

- Is Covid-19 the Next Plague?

QUIZ

Weekly Quizzes will test your understanding of key course material and concepts. You may take the quiz twice, and your higher score will be recorded.

WEEK 5: THE RENAISSANCE TO 1900

LECTURES

- Medical Advances from 1700 to 1900
- The Beginnings of Microbiology
- Germ Theory of Disease
- The Rise of Science and Pseudoscience
- The Superficiality of Pseudoscience

READINGS

- The Alarming History of Medicine (Week 5) (in Canvas)
 - Medicine: A History of Healing (Week 5) (in Canvas)
 - The History of Vaccines
 - Germ History: Milkmaids Inspire Vaccines But the Germs Keep Coming (Video, link in Canvas)
- The third in a series of videos from NPR on the history of infectious diseases, their effects on humans and our responses to them.*
- A Different Way of Listening, from Every Patient Tell a Story (in Canvas)

This reading tells the story of the stethoscopes invention.

WRITING ASSIGNMENT

-Science or Pseudoscience?

QUIZ

Weekly quizzes will test your understanding of key course material and concepts. You may take the quiz twice, and your higher score will be recorded.

OPTIONAL

-“The Butchering Art Book Trailer”

This short video will give you a sense of the realities and risks of surgery prior to antiseptics and anesthesia. Warning: this is not for the faint of heart!

-Interview with Medical Historian Lindsey Fitzharris

WEEK 6: THE STATE OF THE ART IN 1900

LECTURES

- Turn-of-the-Century Advances
- Medicine in 1900
- NPR Throughline: Outbreak (Podcast)
- The history of the anti-vaccination movement.*

READINGS

- The Alarming History of Medicine (Week 6) (in Canvas)
- Medicine: A History of Healing (Week 6) (in Canvas)
- Trick of Treatment (Week 6) (in Canvas)
- Blood & Guts, pp. 92–98, 126–129 (in Canvas)

WRITING ASSIGNMENT

- Miracle Cures

QUIZ

Weekly quizzes will test your understanding of key course material and concepts. You may take the quiz twice, and your higher score will be recorded.

WEEK 7: ORGANIC CHEMISTRY AND THE GERMAN PHARMACEUTICAL STORY

LECTURES

- The Beginnings of Modern Pharmacology
- The European Pharmaceutical Story
- How Do Drugs Work?

READINGS

- Medicine: A History of Healing (Week 7) (in Canvas)
- The Health Century (Week 7) (in Canvas)
- The Placebo Response (Week 7) (in Canvas)
- The First 3500 Years of Aspirin (in Canvas)

WRITING ASSIGNMENT

- How Do Drugs Work?

QUIZ

Weekly quizzes will test your understanding of key course material and concepts. You may take the quiz twice, and your higher score will be recorded.

WEEK 8: ALTERNATIVE MEDICINE

LECTURES

- Alternative Medicine
- Nutrition
- The Art of Diagnosis

READINGS

- Medicine: A History of Healing (Week 8) (in Canvas)
- Trick or Treatment (Week 8) (in Canvas)
- Complementary, Alternative, or Integrative Health: What's in a Name? (in Canvas)
- Alternative Medicine Meets Science (in Canvas)
- Labels Like "Alternative Medicine" Don't Matter (in Canvas)
- Supplements Can Make You Sick (in Canvas)
- Harlod Varmus' 1997 Stanford Medical School Graduation Speech (in Canvas)

WRITING ASSIGNMENT

- Term Paper: Alternative Medicine

QUIZ

Weekly quizzes will test your understanding of key course material and concepts. You may take the quiz twice, and your higher score will be recorded.

WEEK 9: THE CURRENT STATE OF THE ART

LECTURES

- Breakthroughs in Chemistry
- Antibiotics and Vaccines
- Superbugs and Ethical Dilemmas
- Physical Therapies
- Holism and Preventive Medicine

- Probiotics

READINGS

- Blood & Guts, pp. 126–134 (in Canvas)
- The Emperor of All Maladies (Week 9) (in Canvas)
- Medicine: A History of Healing (Week 9) (in Canvas)
- The Health Century (Week 9) (in Canvas)
- From “Trust Us, We’re Doctors” to the Rise of Evidence-Based Medicine (in Canvas)
- Surgical Checklists Save Lives (in Canvas)
- The Largest Health Disparity We Don’t Talk About (in Canvas)
- Two Hidden Cancer Causes: Diabetes and Obesity (in Canvas)
- Groopman (2019) "The Troubled History of Psychiatry" (in Canvas)

WRITING ASSIGNMENT

- THE MOST SERIOUS MEDICAL ISSUE OF OUR TIME

QUIZ

Weekly quizzes will test your understanding of key course material and concepts. You may take the quiz twice, and your higher score will be recorded.

WEEK 10: THE FUTURE OF MEDICINE

LECTURES

- Medical Systems
- The Future of Medicine
- Precision Medicine
- Studies in Medicine: A Coda
- Revenge of the Bacteria

READINGS

- Collins & Varmus (2015) “A New Initiative on Precision Medicine”
- The Emperor of All Maladies (Week 10) (in Canvas)

WRITING ASSIGNMENT

- Living in the Future

QUIZ

Weekly quizzes will test your understanding of key course material and concepts. You may take the quiz twice, and your higher score will be recorded.