

Term Information

Effective Term Spring 2024

General Information

Course Bulletin Listing/Subject Area Pharmacy
Fiscal Unit/Academic Org Pharmacy - D1800
College/Academic Group Pharmacy
Level/Career Undergraduate
Course Number/Catalog 3440
Course Title Drugs that Changed the World
Transcript Abbreviation Drugs Chnged World
Course Description Medications have profoundly affected the human experience. The discovery and use of medications such as antibiotics, contraceptives, and vaccines have reshaped our society in the last century. While many of these medications have had a generally positive impact on human populations, they are not free of controversy. This course will explore their complex history, science, and societal impact.
Semester Credit Hours/Units Fixed: 3

Offering Information

Length Of Course 14 Week, 7 Week
Flexibly Scheduled Course Never
Does any section of this course have a distance education component? No
Grading Basis Letter Grade
Repeatable No
Course Components Lecture
Grade Roster Component Lecture
Credit Available by Exam No
Admission Condition Course No
Off Campus Never
Campus of Offering Columbus, Lima, Mansfield, Marion, Newark, Wooster

Prerequisites and Exclusions

Prerequisites/Corequisites
Exclusions
Electronically Enforced No

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code 51.2010
Subsidy Level Baccalaureate Course
Intended Rank Freshman, Sophomore, Junior, Senior

Requirement/Elective Designation

Health and Well-being

The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes

- Describe how impactful medications have been discovered and developed.
- Discuss how impactful medications have been received by the public at their time of discovery.
- Analyze how the societal impact of these medications has evolved over time.
- Analyze the scientific impact of these medications over time.
- Support adding a new drug to the list of drugs that changed the world based on its scientific and societal impact.
- Reflect on how drug development has had an impact on their personal well-being.

Content Topic List

- Basics of Pharmacology
 - Aspirin/Opiates/Ether
 - Insulin
 - Contraceptives
 - Vaccines
 - Antibiotics
 - Antipsychotics
 - Antidepressants
 - Antivirals
- No

Sought Concurrence

No

Attachments

- PHR 3440_Drugs that changed the world syllabus.docx
(Syllabus. Owner: Bowman, Michael Robert)
- GE submission-health-well-being_Summers_PHR 3440.pdf: theme submission worksheet
(Other Supporting Documentation. Owner: Bowman, Michael Robert)

Comments

- approved by Undergraduate Studies Committee 4/18/23 *(by Bowman, Michael Robert on 04/18/2023 12:50 PM)*

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Bowman, Michael Robert	04/18/2023 12:51 PM	Submitted for Approval
Approved	Mercerhill, Jessica Leigh	04/18/2023 12:58 PM	Unit Approval
Approved	Kelley, Katherine Ann	04/20/2023 07:48 AM	College Approval
Pending Approval	Jenkins, Mary Ellen Bigler Hanlin, Deborah Kay Hilty, Michael Vankeerbergen, Bernadette Chantal Steele, Rachel Lea	04/20/2023 07:48 AM	ASCCAO Approval

PHARMACY 3440
DRUGS THAT CHANGED THE WORLD
SPRING 2024
3-CREDIT HOURS

Instructor

Instructors: Katie Summers, Ph.D.
Office address: 141N Parks Hall
Email address: summers.266@osu.edu
Phone number: 614-292-5829
Office hours: TBD

Class Details

Credit hours: 3

Mode of Delivery: In-person instruction (primarily lecture and class discussions)

Course times and location: TBD

Preferred means of communication:

- My preferred method of communication for questions is email
- My class-wide communications will be sent through the Announcements tool in CarmenCanvas. Please check your notification preferences (go.osu.edu/canvasnotifications) to be sure you receive these messages.

Course Description

Medications have profoundly affected the human experience. The discovery and use of medications such as antibiotics, contraceptives, vaccines and more have reshaped our society in the last century, including contributing to a rapid decline in morbidity and mortality. The discovery and development of these drugs has spurred significant scientific changes in our knowledge of human physiology, as well as drastically impacting the way we live as a society. While many, if not all these medications have had a generally positive impact on human populations, not all of them are free of controversy. In this course, we explore their complex history, science, and societal impact.

Course Goals & Expected Learning Outcomes

GE Health and Well-being Theme

Goal 1: Successful students will analyze health and well-being at a more advanced and deeper level than in the Foundations component.

1.1 Engage in critical and logical thinking about the topic or idea of health and well-being.

1.2 Engage in an advanced, in-depth, scholarly exploration of the topic or idea of health and well-being.

This course will achieve this goal and learning outcomes through students engaging in the weekly class discussions, class assignments, class readings, reflection papers and the final project. These assessments are collectively designed to help students explain and use health information critically, apply skills needed for promoting health and well-being, as well as analyzing the course topics through a variety of perspectives.

Goal 2: Successful students will integrate approaches to health and well-being by making connections to out-of-classroom experiences with academic knowledge or across disciplines and/or to work they have done in previous classes and that they anticipate doing in the future.

2.1 Identify, describe, and synthesize approaches or experiences as they apply to health and well-being.

2.2 Demonstrate a developing sense of self as a learner through reflection, self-assessment and creative work, building on prior experiences to respond to new and challenging contexts.

This course will achieve this goal and learning outcomes through multiple assessments. Through engaging in class discussion, class participation assignments such as self-reflective exercises, scholarly readings, reflection papers, and a group-led final project, students will make connections to the role these prominent medications play in society as well as their own personal wellbeing. Students will also recognize how the impact of these drugs may change depending on a person's perspective, culture and/or lived experiences.

Goal 3: Students will explore and analyze health and well-being through attention to at least two dimensions of well-being (e.g. physical, mental, emotional, career, environmental, spiritual, intellectual, creative, financial, etc.).

3.1 Explore and analyze health and well-being from theoretical, socio-economic, scientific, historical, cultural, technological, policy and/or personal perspectives.

3.2 Identify, reflect on, or apply strategies for promoting health and well-being.

This course will achieve this goal and learning outcomes by exploring and analyzing health and well-being through the dimensions of physical, emotional, and intellectual wellbeing. Overall, all assessments will collectively support students toward exploring and analyzing health and well-being from historical, scientific, cultural, and personal perspectives. This course will help students better understand how these prominent medications affect the body, how they contribute to a person's wellbeing (both positively and negatively) and how these medications have led to health advancements that directly impact the world in which we live.

Specific Course Objectives

At the end of this semester, students who complete the course work will be able to:

1. Describe how impactful medications have been discovered and developed.
2. Discuss how impactful medications have been received by the public at their time of discovery.
3. Analyze how the societal impact of these medications has evolved over time.
4. Analyze the scientific impact of these medications over time.
5. Support adding a new drug to the list of drugs that changed the world based on its scientific and societal impact.
6. Reflect on how drug development has had an impact on their personal well-being.

	<i>Specific Course Objectives</i>					
<i>Health and Well-being theme expected learning outcomes</i>	1.	2.	3.	4.	5.	6.
GE LO1.1: Explore and analyze health and well-being from theoretical, socio-economic, scientific, historical, cultural, technological, policy, and/or personal perspectives	X	X	X	X	X	
GE LO1.2: Identify, reflect on, or apply the strategies for promoting health and well-being.			X		X	X

Required Reading

All of the readings and videos for this course are in electronic format. These include:

- pdf copies of selections from books.
- journal articles accessed through the OSU collection of online journals
- websites for which URLs are provided in Carmen modules
- streaming videos via Secured Media Library or YouTube

Course Assignments & Requirements

Types of Assessments	Points
Participation activities (class discussions, in-class quizzes, worksheets) (10 points each)	180 points (28.5% of grade) (students will drop 5 lowest participation scores)
Reflections (50 points each)	100 points (16% of grade)
Exam	100 points (16% of grade)
Response Paper	100 points (16% of grade)
Final Project	150 points (23.5% of grade)
Check-Point #1 (rubric creation)	20 points
Check-Point #2 (peer review)	30 points
Final Project and Presentation	100 points
Total	630 points

Class Participation:

Resources Allowed/Individual or Group Assignment/In-Person

Everyone is expected to attend class and participate. Each class session (with the exception of the exam day and days in which we complete the final project checkpoints) there will be an in-class activity worth 10 points. We will complete a variety of assignments, short reflections, discussions, and quizzes in class. Students may miss up to 5 class sessions without penalty to account for any illnesses, conflicts, etc.

Reflections:

Resources Allowed/Individual Assignment/Carmen Submission

Twice during the semester (weeks 7 and 13), students will write a 2-page reflection, detailing how the drugs we've learned about in class have had a direct or indirect effect on their own well-being.

Exam:

Limited Resources Allowed/Individual Assignment/In-Person

students will take an in-class examination (week 8) covering course material to demonstrate comprehension of the material and analytical ability. The exam will consist of a multiple choice and short answer component.

Response Paper:

Resources Allowed/Individual Assignment/Carmen Submission

students will write a short (3-4 page) research paper on the drug they have chosen for the final group project. This paper will be due at the end of the semester.

Final Group Project:

Resources Allowed/Group Assignment/Carmen Submission and In-Person presentation

Students will develop a creative research project as a group in which they will argue adding a drug of their choice to the list of “drugs that changed the world.” Details of the assignment will be on Carmen. Groups are expected to present their argument to the class in the form of a poster presentation at the end of the semester.

Grading scale

I use the OSU Standard Scheme for assigning letter grades to points:

93 - 100 (A)	90 - 92.9 (A-)	
87 - 89.9 (B+)	83 - 86.9 (B)	80 - 82.9 (B-)
77 - 79.9 (C+)	73 - 76.9 (C)	70 - 72.9 (C-)
67 - 69.9 (D+)	60 - 66.9 (D)	Below 60 (E)

Late assignments

Late work shall be penalized one letter grade per day (weekends included). For example, A to A- for one day, A- to B+ for two days, B+ to B for three days, etc. No assignment will be accepted more than one week late, except for *extraordinary* circumstances.

Attendance Policy

Attendance is highly encouraged in this course; however, each student will be able to miss up to 5 classes without penalty to their class participation. If you have extenuating circumstances that will keep you out of class for an extended period, **it is your responsibility to communicate this with the instructor as early as possible. Dr. Summers will work with you to ensure your continued success in this course.**

Faculty feedback and response time

Grading and feedback

Evaluation of assignments will be completed within **2 weeks**.

E-mail

I will reply to emails within **24 hours on weekdays**.

Discussion and communication guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Writing style:** While there is no need to compose an email as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. Informality (including an occasional emoticon) is fine for non-academic topics.
- **Tone and civility:** Let us maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Failure to show respect to each other may result in dismissal from the class.

The Writing Center:

The Writing Center website states that it “offers free help with writing at any stage of the writing process for any member of the university community. During our sessions, consultants can work with you on anything from research papers to lab reports, from dissertations to résumés, from proposals to application materials. Appointments are available in-person at 4120 Smith Lab, as well as for online sessions. You may schedule an in-person or online appointment by visiting WOnline or by calling 614-688-4291. Please note that the Writing Center also offers daily walk-in hours—no appointment necessary—in Thompson Library. You do not have to bring in a piece of writing in order to schedule a writing center appointment. Many students report that some of their most productive sessions entail simply talking through ideas. Please check out our "Services" page for the types of consultations we provide. We also maintain a [resources page \(https://cstw.osu.edu/writing-resources\)](https://cstw.osu.edu/writing-resources) with writing handouts and links to [online resources \(https://cstw.osu.edu/writing-resources/research-resources\)](https://cstw.osu.edu/writing-resources/research-resources).”

Course technology

During in-person class sessions you will need a portable electronic device capable of interacting with Carmen and TopHat.

For help with your password, university e-mail, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at <https://ocio.osu.edu/help/hours>, and support for urgent issues is available 24x7.

- **Self-Service and Chat support:** <http://ocio.osu.edu/selfservice>
- **Phone:** 614-688-HELP (4357)
- **Email:** 8help@osu.edu
- **TDD:** 614-688-8743

Technical skills necessary for this course

- Basic computer and web-browsing skills
- Navigating Carmen

Necessary equipment

- Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection
- Microphone: built-in laptop or tablet mic or external microphone

Necessary software

- Microsoft Office 365 ProPlus All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft's Student Advantage program. Each student can install Office on five PCs or Macs, five tablets (Windows, iPad® and Android™) and five phones.
 - Students are able to access Word, Excel, PowerPoint, Outlook and other programs, depending on platform. Users will also receive 1 TB of OneDrive for Business storage.
 - Office 365 is installed within your BuckeyeMail account. Full instructions for downloading and installation can be found <https://ocio.osu.edu/kb04733>.
- Adobe Reader and any plugins (e.g. Flash) needed to view videos; other presentation software, such as Prezi (not OSU approved) or Explain Everything (OSU approved), if desired.

OSU resources

If you do not own a computer, then you may use one in the library or any computer lab for completing written work and accessing Carmen. To create voice-over presentations and videos, take advantage of one of the Digital Unions on campus. A complete list of facilities and their hours is available at <https://odee.osu.edu/digital-union>.

Academic services

Your OSU academic advisor has a wealth of information about how to navigate the university and to manage your time here. Do take advantage of their help. Start with the main website at <http://advising.osu.edu/welcome.shtml> and use the site's search box. If you are struggling with study skills, check out the Younkin Success Center at <http://younkinsuccess.osu.edu/academic-services/>. The College of Arts and Sciences has its own page of resources at <https://artsandsciences.osu.edu/academics/current-students/resources>. Everyone wants to see you succeed.

Academic integrity policy

Policies for this course

- **Written assignments:** Your written assignments must be your own original work. In formal assignments, you should follow the citation style specified in the assignments to cite the ideas and words of your research sources. You are encouraged to ask a trusted

person to proofread your assignments before you turn them in--but no one else should revise or rewrite your work.

- **Reusing past work:** In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you have explored in previous courses, please discuss the situation with Dr. Summers.
- **Falsifying research or results:** All research you will conduct in this course is intended to be a learning experience; you should never feel tempted to make your results or your library research look more successful than it was.
- **Collaboration and informal peer-review:** The course includes opportunities for collaboration with your classmates. While study groups and peer review are encouraged, remember that comparing and copying answers on essays is not permitted. If you are unsure about a particular situation, please feel free just to ask ahead of time.

Ohio State's academic integrity policy

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's *Code of Student Conduct*, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University, or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's *Code of Student Conduct* is never considered an excuse for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

In addition, OSU had made Turnitin, a learning tool and plagiarism prevention system, available to instructors. For this class, you will submit your papers to Turnitin from Carmen. When grading your work, I will interpret the originality report, following [Section A of OSU's Code of Student Conduct](#) as appropriate. For more information about Turnitin, please see [the vendor's guide for students](#). Note that submitted final papers become part of the OSU database.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact us.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- The Committee on Academic Misconduct web pages ([COAM Home](#))
- *Ten Suggestions for Preserving Academic Integrity* ([Ten Suggestions](#))
- *Eight Cardinal Rules of Academic Integrity* (www.northwestern.edu/uacc/8cards.htm)

Copyright disclaimer

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

Accessibility accommodations for students with disabilities

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Accessibility of course technology

This course requires use of Carmen (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor or with Student Life Disability Services.

Your mental health!

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. No matter where you are engaged in distance learning, The Ohio State University's Student Life Counseling and Consultation Service (CCS) is here to support you. If you find yourself feeling isolated, anxious or overwhelmed, on-demand resources are available at <https://go.osu.edu/ccsondemand>. You can reach an on-call counselor when CCS is closed at 614-292-5766, and 24-hour emergency help is also available through the 24/7 National Prevention Hotline at 1-800-273-TALK or at <https://suicidepreventionlifeline.org>. The Ohio State Wellness app is also a great resource available at <https://go.osu.edu/wellnessapp>.

Creating an Environment Free from Harassment, Discrimination, and Sexual Misconduct

The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Office of Institutional Equity:

1. Online reporting form at equity.osu.edu,
2. Call 614-247-5838 or TTY 614-688-8605,
3. Or email equity@osu.edu

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Office of Institutional Equity to ensure the university can take appropriate action:

- All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.
- The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member.

Course schedule

Week 1: Basics of Pharmacology (week of 1/8)

T: Introductions/basics of pharmacology

Th: basics of pharmacology

Readings:

- "Receptor Theory." Basic Concepts in Pharmacology: What You Need to Know for Each Drug Class, 6e Ed. Janet L. Stringer. McGraw Hill, 2022, <https://accesspharmacy-mhmedical-com.proxy.lib.ohio-state.edu/content.aspx?bookid=3136§ionid=263123424>.

Week 2: Basics of Pharmacology (week of 1/15)

T: Drug targets/classes

Readings:

- "Pharmacodynamics: Molecular Mechanisms of Drug Action." Goodman and Gilman's Manual of Pharmacology and Therapeutics, 2e Eds. Randa Hilal-Dandan, and Laurence L. Brunton. McGraw Hill, 2016, <https://accesspharmacy-mhmedical-com.proxy.lib.ohio-state.edu/content.aspx?bookid=1810§ionid=124489721>.

Th: aspirin-discovery, development, and introduction

Readings:

- Chapter 1: Aspirin
Marko, Vladimir. From Aspirin to Viagra: Stories of the Drugs that Changed the World. Springer Nature, 2020.
- Miner J, Hoffhines A. The discovery of aspirin's antithrombotic effects. *Tex Heart Inst J*. 2007;34(2):179-86. PMID: 17622365; PMCID: PMC1894700.

Week 3: Aspirin/Opiates/Ether (week of 1/22)

T: Opiates and Ether-discovery, development and introduction

Readings:

- Brownstein, Michael J. "A brief history of opiates, opioid peptides, and opioid receptors." *Proceedings of the National Academy of Sciences* 90.12 (1993): 5391-5393.
- Chaturvedi R, Gogna RL Retd. Ether day: an intriguing history. *Med J Armed Forces India*. 2011 Oct;67(4):306-8. doi: 10.1016/S0377-1237(11)60098-1. Epub 2011 Oct 22. PMID: 27365835; PMCID: PMC4920664.

Th: societal impact of aspirin/opiates/ether

Readings:

- Dasgupta N, Beletsky L, Ciccarone D. Opioid Crisis: No Easy Fix to Its Social and Economic Determinants. *Am J Public Health*. 2018 Feb;108(2):182-186. doi: 10.2105/AJPH.2017.304187. Epub 2017 Dec 21. PMID: 29267060; PMCID: PMC5846593.

Week 4: Insulin (week of 1/29)

T: insulin- discovery, development, and introduction

Readings:

- Chapter 4, insulin
Marko, Vladimir. *From Aspirin to Viagra: Stories of the Drugs that Changed the World*. Springer Nature, 2020.

Th: societal impact of insulin-price gouging and growing need

Readings:

- Ofri, Danielle. "The Insulin Wars." *The New York Times*, 18 Jan. 2019.
- Ward, Zachary J., et al. "Estimating the total incidence of type 1 diabetes in children and adolescents aged 0–19 years from 1990 to 2050: a global simulation-based analysis." *The Lancet Diabetes & Endocrinology* 10.12 (2022): 848-858.

Week 5: final project step 1/contraceptives (week of 2/5)

T: final project introduction; Final Project Checkpoint #1 due in class

Th: contraceptives- discovery, development, and introduction

Readings:

- Chapter 6, The Pill
Marko, Vladimir. *From Aspirin to Viagra: Stories of the Drugs that Changed the World*. Springer Nature, 2020.

Week 6: Contraceptives (week of 2/12)

T: societal impact of contraceptives

Readings:

- Tyrer, Louise. "Introduction of the pill and its impact." *Contraception* 59.1 (1999): 11S-16S.
- "Trends in Family Planning." *World Fertility and Family Planning 2020 Highlights*. United Nations, 2020.

Th: societal impact of contraceptives-current political attacks

Readings:

- Jong-Fast, Molly. "The Anti-Birth Control Movement Is the New Anti-Abortion Movement." *Vogue*, 1, July, 2021.

Week 7: Vaccines (week of 2/19; reflection paper #1 due)

T: vaccines- discovery, development, and global impact

Readings:

- Chapter 10, Vaccines
Marko, Vladimir. From Aspirin to Viagra: Stories of the Drugs that Changed the World. Springer Nature, 2020.

Th: vaccines-current technologies

Readings:

- Pardi, N., Hogan, M., Porter, F. et al. mRNA vaccines — a new era in vaccinology. *Nat Rev Drug Discov* 17, 261–279 (2018).

Week 8: Vaccines/Exam (week of 2/26)

T: vaccines-current culture war

Readings:

- Maya J. Goldenberg, *Vaccine Hesitancy: Public Trust, Expertise, and the War on Science* (Pittsburgh: University of Pittsburgh Press, 2021), 21-70.

Th: Exam

Week 9: Antibiotics (week of 3/4)

T: antibiotics- discovery, development, and early vaccines

Readings:

- Chapter 5, Penicillin
Marko, Vladimir. From Aspirin to Viagra: Stories of the Drugs that Changed the World. Springer Nature, 2020.

Th: antibiotics-societal impact and risk of resistance

Readings:

- Ventola CL. The antibiotic resistance crisis: part 1: causes and threats. *P T.* 2015 Apr;40(4):277-83. PMID: 25859123; PMCID: PMC4378521.

Week 10: Antipsychotics (week of 3/18)

T: antipsychotics- discovery, development, and introduction

Readings:

- Chapter 7, Chlorpromazine
Marko, Vladimir. From Aspirin to Viagra: Stories of the Drugs that Changed the World. Springer Nature, 2020.

Th: antipsychotics- societal impact

Readings:

- Townsend M, Pareja K, Buchanan-Hughes A, Worthington E, Pritchett D, Brubaker M, Houle C, Mose TN, Waters H. Antipsychotic-Related Stigma and the Impact on Treatment Choices: A Systematic Review and Framework Synthesis. *Patient Prefer*

Adherence. 2022 Feb 16;16:373-401. doi: 10.2147/PPA.S343211. PMID: 35210756; PMCID: PMC8859276.

Week 11: final project step 2/antidepressants (week of 3/25)

T: Final project Checkpoint #2 due in class

Th: antidepressants-discovery, development, and introduction

Readings:

- Chapter 8, Prozac
Marko, Vladimir. From Aspirin to Viagra: Stories of the Drugs that Changed the World. Springer Nature, 2020.

Week 12: antidepressants/antivirals (week of 4/1)

T: antidepressants- societal impact

- Mukherjee, Siddhartha. "Post-Prozac Nation." The New York Times, 19 Apr. 2012.

Th: antivirals-discovery, development, and introduction

Readings:

- Field, Hugh J., and Erik De Clercq. "Antiviral drugs-a short history of their discovery and development." Microbiology Today 31.2 (2004): 58-61.

Week 13: antivirals/future endeavors (week of 4/8; reflection #2 due)

T: antivirals-societal impact; HIV/AIDS

- Andrei, Graciela. "Vaccines and antivirals: Grand challenges and great opportunities." Frontiers in Virology 1 (2021): 666548.

Th: A look to the future of drug research

- Villoutreix, Bruno O. "Post-Pandemic drug discovery and development: facing present and future challenges." Frontiers in Drug Discovery 1 (2021): 728469.

Week 14: Final projects (week of 4/15)

T: Final Project Group A presentations

Th: Final Project Group B presentations

Week 15: Finals week

Response paper due on day of class final; Please see Carmen for due date

GE Theme course submission worksheet: Health & Wellbeing

Overview

Courses in the GE Themes aim to provide students with opportunities to explore big picture ideas and problems within the specific practice and expertise of a discipline or department. Although many Theme courses serve within disciplinary majors or minors, by requesting inclusion in the General Education, programs are committing to the incorporation of the goals of the focal theme and the success and participation of students from outside of their program.

Each category of the GE has specific learning goals and Expected Learning Outcomes (ELOs) that connect to the big picture goals of the program. ELOs describe the knowledge or skills students should have by the end of the course. Courses in the GE Themes must meet the ELOs common for **all** GE Themes and those specific to the Theme, in addition to any ELOs the instructor has developed specific to that course. All courses in the GE must indicate that they are part of the GE and include the Goals and ELOs of their GE category on their syllabus.

The prompts in this form elicit information about how this course meets the expectations of the GE Themes. The form will be reviewed by a group of content experts (the Theme Advisory) and by a group of curriculum experts (the Theme Panel), with the latter having responsibility for the ELOs and Goals common to all themes (those things that make a course appropriate for the GE Themes) and the former having responsibility for the ELOs and Goals specific to the topic of **this** Theme.

Briefly describe how this course connects to or exemplifies the concept of this Theme (Health & Wellbeing)

In a sentence or two, explain how this class “fits’ within the focal Theme. This will help reviewers understand the intended frame of reference for the course-specific activities described below.

(enter text here)

Pharmacy 3440: Drugs that Changed the World belongs in the Health and Wellbeing theme because the course will focus on a variety of drugs and drug classes that have had a direct influence on the health and wellbeing of individuals, societies, and the globe. Students will learn about the development of each of these drugs, how they work and what diseases they treat/cure and then will focus heavily on their impact in society. The impact these drugs have will be examined at the level of the self all the way up to global impacts. Through a variety of reflections, discussions and a final project, students will come to understand how medications have helped shape society today and how they directly affect their own well-being.

Connect this course to the Goals and ELOs shared by *all* Themes

Below are the Goals and ELOs common to all Themes. In the accompanying table, for each ELO, describe the activities (discussions, readings, lectures, assignments) that provide opportunities for students to achieve those outcomes. The answer should be concise and use language accessible to colleagues outside of the submitting department or discipline. The specifics of the activities matter—listing “readings” without a reference to the topic of those readings will not allow the reviewers to understand how the ELO will be met. However, the panel evaluating the fit of the course to the Theme will review this form in conjunction with the syllabus, so if readings, lecture/discussion topics, or other specifics are provided on the syllabus, it is not necessary to reiterate them within this form. The ELOs are expected to vary in their “coverage” in terms of number of activities or emphasis within the course. Examples from successful courses are shared on the next page.

Goal 1: Successful students will analyze an important topic or idea at a more advanced and in-depth level than the foundations. In this context, “advanced” refers to courses that are e.g., synthetic, rely on research or cutting-edge findings, or deeply engage with the subject matter, among other possibilities.

Goal 2: Successful students will integrate approaches to the theme by making connections to out-of-classroom experiences with academic knowledge or across disciplines and/or to work they have done in previous classes and that they anticipate doing in future.

	Course activities and assignments to meet these ELOs
<p>ELO 1.1 Engage in critical and logical thinking.</p>	<p>This course will build the skills needed to engage in critical and logical thinking about health and well-being through:</p> <p>In-class discussions: Engagement in class-based discussion regarding weekly scholarly readings and lecture focusing on topics including but not limited to medication access, disease prevalence, drug cost, stigma and others;</p> <p>Final group project and response paper: Students will select a drug to be given the title of "world-changing" and defend that decision in their final group project and response paper; the impact of the drug should be discussed from multiple perspectives such as scientific, historical, cultural and personal.</p> <p>Course Goals that relate to this ELO:</p> <ol style="list-style-type: none"> 1. Describe how impactful medications have been discovered and developed. 2. Discuss how impactful medications have been received by the public at their time of discovery. 3. Analyze how the societal impact of these medications has evolved over time. 4. Analyze the scientific impact of these medications over time. 5. Support adding a new drug to the list of drugs that changed the world based on its scientific and societal impact. 6. Reflect on how drug development has had an impact on their personal well-being.

<p>ELO 1.2 Engage in an advanced, in-depth, scholarly exploration of the topic or ideas within this theme.</p>	<p>To engage in an advanced, in-depth scholarly exploration of this topic, students will participate in a variety of lectures, readings, and discussions, as well as a response paper and final project. Rather than reading solely, or even primarily, from a textbook, in this course students will read a range of cutting-edge scholarship on the history and science of drug discovery and cultural impact. Sources range from primary sources to peer-reviewed scientific research in major journals. Many class discussions are focused on deconstructing these readings. Each reading will be paired with a live lecture with active learning components such as review questions, think-pair-share activities, concept mapping, and others. The lectures, paired with the readings, will allow students to explore these topics at a deeper level and then discussions will be embedded within the class time to ensure everyone has a strong understanding of the material. Completion of bi-weekly quizzes and the exam will also occur to allow students to demonstrate comprehension of course materials and readings as well as demonstrate they have a core understanding of drug action. Finally, students will also conduct independent research for their final projects and response paper in which they will be expected to delve deeply into major scholarship on a drug of their choice and provide a robust bibliography of scholarly sources on their topic. They will also be expected to defend their choices, as the purpose of the final project is to argue that their drug of choice be given the title of a “drug that has changed the world.”</p> <p>Example discussion: During the lectures focused on insulin, we will discuss its discovery, use, and impact on global health. Once students have a strong understanding of the purpose of insulin and its use in treating diabetes (primarily type 1 diabetes), we will then learn about current issues surrounding insulin, both in the U.S. and globally related to access, price, administration, etc. Students are expected to read two articles: “The Insulin Wars” by Danielle Ofri, published in <i>The New York Times</i> in 2019 and “Estimating the total incidence of type 1 diabetes in children and adolescents aged 0–19 years from 1990 to 2050: a global simulation-based analysis.” By Zachary Ward et. al. and published in <i>The Lancet Diabetes and Endocrinology</i> in 2022. Ward’s article highlights how globally, we are undercounting the number of new type 1 diabetes cases, and that the incidence of type 1 diabetes in children is expected to increase by over 100,000 new cases per year by 2050, with the largest increases seen in Africa. Our discussion will talk about the potential issues this will cause, how current issues, specifically with the price of insulin and access to the drug, could be exacerbated, and discuss what should be done to help patients in need.</p> <p>Course goals that align with this ELO: 3. Analyze how the societal impact of these medications has evolved over time. 4. Analyze the scientific impact of these medications over time.</p>
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	<p>5. Support adding a new drug to the list of drugs that changed the world based on its scientific and societal impact.</p>
<p>ELO 2.1 Identify, describe, and synthesize approaches or experiences.</p>	<p>Students will engage in advanced exploration of each drug or drug class presented in class through lectures, readings and activities.</p> <p>Lectures: For each drug presented, there will be at least one lecture covering the discovery and development of the drug, as well as a high-level overview of the drug itself (how it works, what it's used for, side effects). There will also be at least one lecture focusing on the impact of this drug from a variety of perspectives and at multiple levels (impact on self, on the U.S., and around the globe). Each lecture will contain information from scholarly sources as well as popular news sources and some will include short videos or other media that supports the content. For example, students will be asked to watch the Ted Talk "What do we do when antibiotics don't work anymore?" by Maryn McKenna and then participate in a class discussion on the local and global implications of antibiotic resistance.</p> <p>Readings: The book written by Vladimir Marko, <i>From Aspirin to Viagra: Stories of the Drugs that Changed the World</i>, will be used throughout the course to provide context for many of the drug's origins and early impacts. This book will be supplemented with a variety of scholarly readings, as well as a few from popular media to highlight either the effects of the drugs or their impact on the world. All readings are available to students for free on the internet or through the OSU library website.</p> <p>Class Participation activities: Each class (except for classes already earmarked for the exam and final project checkpoints) will either have a class discussion, activity/worksheet, reflection, or quiz to help reinforce the material presented. Quizzes will occur on a biweekly basis to ensure students are comprehending the material, and discussions will be used to expand upon lecture content and readings. Activities, such as the one described below, will help students go beyond the material presented and help students think about the content from a variety of perspectives and finally, the reflections will help students think about how the content they're learning has an impact on their own health and well-being.</p> <p>Example activity: Students will search for a vaccine (measles, mumps, and rubella vaccine, human papilloma virus vaccine, or covid-19 vaccine) on a scholarly search engine and at least two social media platforms (YouTube, Twitter, Facebook, TikTok,</p>

	<p>Instagram,etc.). They will then work through a worksheet with questions that address the content of the search results, the intended audience, and emotional/intellectual impact. They will then be asked to reflect how popular media can have an impact on personal health decisions related to vaccines and how it affects their well-being.</p> <p>Course goals that align with this ELO:</p> <ol style="list-style-type: none"> 1. Describe how impactful medications have been discovered and developed. 3. Analyze how the societal impact of these medications has evolved over time. 4. Analyze the scientific impact of these medications over time. 5. Support adding a new drug to the list of drugs that changed the world based on its scientific and societal impact.
<p>ELO 2.2 Demonstrate a developing sense of self as a learner through reflection, self-assessment, and creative work, building on prior experiences to respond to new and challenging contexts.</p>	<p>Students will demonstrate a developing sense of self as a learner primarily through two overarching self-reflections spread out throughout the semester (weeks 7 and 13) as well as the final group project.</p> <p>Self-Reflections: Students will write a 2-page reflection, detailing how the drugs we've learned about in class have had a direct or indirect effect on their own well-being. They will explore questions such as "How has this drug directly impacted my life or those close to me?" and "If this drug or drug class didn't exist, how would my life be different? How would the world be different?" "Do you believe the impact of this drug or drug class has been positive, negative, or neutral overall? Why?"</p> <p>Final group project: Students in the class will form groups of 3-4 people and choose a drug or drug class not discussed in class to further research. Students will be expected to include information on the discovery, development and global impact of the drug and then defend to their peers and instructor why they believe this drug deserves to be on the list of "drugs that changed the world". Throughout the semester, the lectures will act as a scaffold to help students understand how to best defend their decision, evaluate data on impact, discuss cultural impact and look at these drugs from a global scale. To enhance their participation and learning in this assignment, students will also spend a class session working with each other to create a rubric to evaluate the final presentation that will be used by the students during their evaluation of each other's projects. Students will also be provided a list of potential drugs to choose from; however, students may also select a different drug not on the list after discussing it with the instructor. The potential list of drug candidates includes chemotherapy agents, vitamin C, Viagra, statins, metformin, monoclonal antibodies, synthetic opioids, and others.</p>

	<p>Response paper: In addition to the group project, students will be asked to write a 3–4-page paper individually on the drug they chose for the group project. This paper is expected to enhance their overall argument from the group project but will require students to add their personal perspective on how this drug has had an impact, whether directly or indirectly, on their own health and well-being.</p> <p>Course Goals that relate to this ELO: 5. Support adding a new drug to the list of drugs that changed the world based on its scientific and societal impact. 6. Reflect on how drug development has had an impact on their personal well-being.</p>
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Example responses for proposals within “Citizenship” (from Sociology 3200, Comm 2850, French 2803):

<p>ELO 1.1 Engage in critical and logical thinking.</p>	<p><i>This course will build skills needed to engage in critical and logical thinking about immigration and immigration related policy through: Weekly reading response papers which require the students to synthesize and critically evaluate cutting-edge scholarship on immigration; Engagement in class-based discussion and debates on immigration-related topics using evidence-based logical reasoning to evaluate policy positions; Completion of an assignment which build skills in analyzing empirical data on immigration (Assignment #1)</i></p>
	<p><i>Completion 3 assignments which build skills in connecting individual experiences with broader population-based patterns (Assignments #1, #2, #3) Completion of 3 quizzes in which students demonstrate comprehension of the course readings and materials.</i></p>

<p>ELO 2.1 Identify, describe, and synthesize approaches or experiences.</p>	<p>Students engage in advanced exploration of each module topic through a combination of lectures, readings, and discussions.</p> <p><u>Lecture</u> Course materials come from a variety of sources to help students engage in the relationship between media and citizenship at an advanced level. Each of the 12 modules has 3-4 lectures that contain information from both peer-reviewed and popular sources. Additionally, each module has at least one guest lecture from an expert in that topic to increase students’ access to people with expertise in a variety of areas.</p> <p><u>Reading</u> The textbook for this course provides background information on each topic and corresponds to the lectures. Students also take some control over their own learning by choosing at least one peer-reviewed article and at least one newspaper article from outside the class materials to read and include in their weekly discussion posts.</p> <p><u>Discussions</u> Students do weekly discussions and are given flexibility in their topic choices in order to allow them to take some control over their education. They are also asked to provide information from sources they’ve found outside the lecture materials. In this way, they are able to explore areas of particular interest to them and practice the skills they will need to gather information about current events, analyze this information, and communicate it with others.</p> <p>Activity Example: Civility impacts citizenship behaviors in many ways. Students are asked to choose a TED talk from a provided list (or choose another speech of their interest) and summarize and evaluate what it says about the relationship between civility and citizenship. Examples of Ted Talks on the list include Steven Petrow on the difference between being polite and being civil, Chimamanda Ngozi Adichie’s talk on how a single story can perpetuate stereotypes, and Claire Wardle’s talk on how diversity can enhance citizenship.</p>
<p>ELO 2.2 Demonstrate a developing sense of self as a learner through reflection, self-assessment, and creative work, building on prior experiences to respond to new and challenging contexts.</p>	<p>Students will conduct research on a specific event or site in Paris not already discussed in depth in class. Students will submit a 300-word abstract of their topic and a bibliography of at least five reputable academic and mainstream sources. At the end of the semester they will submit a 5-page research paper and present their findings in a 10-minute oral and visual presentation in a small-group setting in Zoom.</p> <p>Some examples of events and sites: The Paris Commune, an 1871 socialist uprising violently squelched by conservative forces</p>
	<p>Jazz-Age Montmartre, where a small community of African-Americans—including actress and singer Josephine Baker, who was just inducted into the French Pantheon—settled and worked after World War I. The Vélodrome d’hiver Roundup, 16-17 July 1942, when 13,000 Jews were rounded up by Paris police before being sent to concentration camps The Marais, a vibrant Paris neighborhood inhabited over the centuries by aristocrats, then Jews, then the LGBTQ+ community, among other groups.</p>

Goals and ELOs unique to Health & Wellbeing

Below are the Goals and ELOs specific to this Theme. As above, in the accompanying Table, for each ELO, describe the activities (discussions, readings, lectures, assignments) that provide opportunities for students to achieve those outcomes. The answer should be concise and use language accessible to colleagues outside of the submitting department or discipline. The ELOs are expected to vary in their “coverage” in terms of number of activities or emphasis within the course. Examples from successful courses are shared on the next page.

GOAL 3: Students will explore and analyze health and wellbeing through attention to at least two dimensions of wellbeing. (Ex: physical, mental, emotional, career, environmental, spiritual, intellectual, creative, financial, etc.).

	Course activities and assignments to meet these ELOs
ELO 3.1 Explore and analyze health and wellbeing from theoretical, socio-economic, scientific, historical, cultural, technological, policy, and/or personal perspectives.	<p>This course will achieve this goal and learning outcomes by exploring and analyzing health and well-being through the dimensions of physical, emotional, and intellectual wellbeing. Overall, all lectures and assessments will collectively support students toward exploring and analyzing health and well-being from historical, scientific, cultural, and personal perspectives.</p> <p>Lectures: The course is designed to focus on at least 10 drugs/drug classes throughout the semester with a focus on the history of the drug discovery/development and early impact, as well as the overall global/cultural impact of the drug in current times. Students will also learn how the drug works in the body at a basic biological level during these lectures.</p> <p>Assessments: Daily participation activities will help reinforce the historical, scientific, cultural, and personal perspectives through in-class discussions, content quizzes, activities and brief self-reflections on the content presented in lecture. The larger, 2-page self-reflections will primarily focus on the impact these drugs have on personal and public health and well-being. The exam will reinforce scientific and historical content from the first half of the course, and ensure students understand the various ways the drugs presented to them have changed the world. Finally, the response paper and final project will ask them to apply what they have learned from class, go beyond the content, and perform their own research, and then provide scholarly support to adding a drug of their choice to the list of drugs that have changed the world. To defend their choice, they will need to discuss how their drug of choice has impacted health and well-being from a historical, scientific, cultural, and personal perspective.</p>

	<p>Course Goals that relate to this ELO:</p> <ol style="list-style-type: none"> 1. Describe how impactful medications have been discovered and developed. 2. Discuss how impactful medications have been received by the public at their time of discovery. 3. Analyze how the societal impact of these medications has evolved over time. 4. Analyze the scientific impact of these medications over time. 5. Support adding a new drug to the list of drugs that changed the world based on its scientific and societal impact.
<p>ELO 3.2 Identify, reflect on, or apply strategies for promoting health and well-being.</p>	<p>This course will help students better understand how these prominent medications affect the body, how they contribute to a person’s wellbeing (both positively and negatively) and how these medications have led to health advancements that directly impact the world in which we live by improving public health both locally and globally.</p> <p>In-class discussions and activities: Often discussions will have a component that will ask students how cultural problems that have arisen with certain drugs (opiates, anti-depressants, anti-psychotics, insulin, contraceptives, vaccines, etc.) could be addressed. Many of these drugs have developed a negative stigma either through things such as misuse (opiates), cultural/religious reasons (contraceptives, vaccines), stereotypes/bias (anti-depressants and anti-psychotics) or price (insulin); however, many of these drugs are life-altering/lifesaving and some of that importance has been lost given these stigmas. Class discussions will reinforce the purpose of these drugs, ask students to reflect on how some of these negative associations have come to be, reflect on how some of these negative associations may have impacted their own health and well-being, and how we, as a society, could help re-elevate these drugs and explain their importance to personal and public well-being.</p> <p>Self-reflections: To illustrate achievement of this learning outcome, the 2 larger self-reflection assignments embedded in the class will ask students to dive deeper into 1 to 2 drug discussed in class and reflect on the personal impact of the drug. This assignment is an individual assignment, so it will also allow students to go further into their own self-reflection and allow them to be open with how they feel some of these drugs have directly affected their well-being.</p> <p>Response paper and Final project: The response paper and final project will ask them to apply what they have learned from class, go beyond</p>

the content, and perform their own research, and then provide scholarly support to adding a drug of their choice to the list of drugs that have changed the world. To defend their choice, they will need to discuss how their drug of choice has impacted health and well-being from a historical, scientific, cultural, and personal perspective. The response paper will then ask each student to individually reflect on the impact this drug has had on their own well-being, either directly or indirectly.

Course Goals that relate to this ELO:

3. Analyze how the societal impact of these medications has evolved over time.
5. Support adding a new drug to the list of drugs that changed the world based on its scientific and societal impact.
6. Reflect on how drug development has had an impact on their personal well-being.