



**Syllabus**  
Course PUBH 701: Cost-Effectiveness in Health and Medicine  
Spring 2020  
2 Credits | Residential

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### Course Description

This course provides an overview of economic evaluation of healthcare and public health interventions, methods of cost-effectiveness analyses (CEA), and use of CEA to inform health-related decision-making. In addition, this course allows students to explore controversies and ethical issues related to prioritization of resources and develop their own protocol for a future CEA.

**Prerequisites:** None. Students must be enrolled in the Population Health for Clinicians concentration or have permission of the instructor to enroll.

### Instructor

Cynthia Feltner, MD MPH  
Assistant Professor, Division of General Medicine and Clinical Epidemiology  
Co-lead, Population Health for Clinicians Concentration  
Adjunct Professor, Public Health Leadership  
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### Teaching Assistant

Eva Bauer, current *MPH Leadership in Practice* student  
Email: [ebauer3@live.unc.edu](mailto:ebauer3@live.unc.edu)

**Office Hours:** There are no set office hours for this course. Students may request an appointment with instructors by email.

**Course Website:** <https://sakai.unc.edu/welcome/>. Use your ONYEN and password.

**Class Days, Times, Location:** Mondays 2:30-4:25 McGavran-Greenberg 2306

### Course Texts

- Neumann, Peter J., Gillian D. Sanders, Louise B. Russell, Joanna E. Siegel, and Theodore G. Ganiats, eds. *Cost-effectiveness in health and medicine*. Oxford University Press, 2016  
*Available via the UNC Health Sciences Library E-book collection. There is no cost. You must log in with your UNC Onyen and password.*
- Additional resources will be posted on Sakai

### Course Overview

This course provides an overview of economic evaluation of healthcare and public health interventions. The goal is to provide students with skills to think critically about “value” and how economic evaluations can inform population health decision-making. This course builds on prior coursework in population health, health policy, clinical epidemiology and statistics to provide a to provide an in-depth understanding of methods and policy considerations relate to economic evaluations. The overarching goal of the course is to prepare students to participate in research involving economic evaluation and/or to apply economic evaluations in health-related decision-making on behalf of populations. This course will also address current contextual and ethical issues associated with the problem of high healthcare costs in the United States, and the public health consequences of high healthcare costs.

### Course Format

This is a weekly seminar-style course. Most sessions will include a short lecture, group discussion and active learning opportunities. Attendance is required, and in-class participation is included as part of the course grade.

### Course-at-a-Glance

The instructor reserves the right to make changes to the syllabus, including topics, readings, assignments, and due dates. Any changes will be announced as early as possible. For session-by-session course schedule details, please see below.

Date/ Session	Topic	Assignment Due
Session 1 Jan 13	<b>Course Introduction</b> <ul style="list-style-type: none"> <li>• Introductions; course overview</li> <li>• Discuss definition of “value” in healthcare/public health</li> </ul>	
Jan 20	<b>MLK, Jr. Holiday—No class</b>	
Session 2 Jan 27	<b>Economic analyses and ICERs (Part 1)</b> <ul style="list-style-type: none"> <li>• Overview of different economic analyses (study designs)</li> <li>• Review: Incremental cost-effectiveness ratios (ICERs)</li> </ul>	
Session 3 Feb 3	<b>ICERs (Part 2) and Utility measures</b> <ul style="list-style-type: none"> <li>• What goes into the ICER numerator and denominator?</li> <li>• Utility measures</li> <li>• Cost-utility outcomes (and related ethical issues)</li> </ul>	
Session 4 Feb 10	<b>Modeling and addressing uncertainty</b> <ul style="list-style-type: none"> <li>• Types of modeling</li> <li>• Uncertainty and sensitivity analyses</li> <li>• Modeling exercise</li> </ul> <b>Discounting (and other hard decisions)</b>	In-class modeling exercise (perinatal HIV)
Session 5 Feb 17	<b>Critical appraisal of cost-effectiveness analyses (Part 1)</b> <ul style="list-style-type: none"> <li>• Overview: common sources of bias (including bias in comparisons)</li> <li>• Small group critical appraisal (see Sakai)- <i>Cost-effectiveness of dark chocolate to prevent cardiovascular disease</i></li> </ul>	Individual DRAFT appraisal due by start of class (Sakai drop-box); template posed on Sakai
Session 6 Feb 24	<b>Financial Toxicity, Guest Speaker TBA</b>	
Session 7 Mar 2	<b>Use of CEA: Maximizing value in low-resource countries</b> <ul style="list-style-type: none"> <li>• What particular challenges are there in conducting economic analyses focused on health-related decisions in developing countries?</li> </ul>	DRAFT FIGURE of analytic model for CEA proposal due (Sakai drop)
Mar 9	<b>Spring Break—No class</b>	
Session 8 Mar 16	<b>Review:</b> <ul style="list-style-type: none"> <li>• Feedback on draft ICERs</li> <li>• Use of CEAs in US policy and practice</li> </ul> <b>Introduction and planning of small group presentations (value of obesity programs/policies/interventions)</b> <ul style="list-style-type: none"> <li>• Discuss group assignment/expectations</li> <li>• Q&amp;A</li> </ul>	
Session 9 Mar 23	<b>Ethical Considerations</b>	

	<ul style="list-style-type: none"> <li>Discuss ethical considerations in the design, conduct and use of economic evaluations</li> </ul> <p><b>Part 2: Small Group Presentations:</b></p> <ul style="list-style-type: none"> <li>Time provided to work in class and ask questions</li> </ul>	
Session 10 Mar 30	<p><b>Misuse of CEA, communicating about “value”</b></p> <ul style="list-style-type: none"> <li>Misuse of terminology; value vs. profit</li> <li>Population vs. individual health decision-making and value:</li> </ul> <p><b>Using modeling/CEA to address health equity concerns</b></p> <ul style="list-style-type: none"> <li>Example/ discussion</li> </ul>	
Session 11 April 6	<b>Value Based Care in Pediatrics, Guest Speaker: Ginny Moyer, MD MPH</b>	
Session 12 April 13	<p><b>Small group presentations (Session #1)</b></p> <ul style="list-style-type: none"> <li>3 or 4 groups present in class</li> <li>All groups should be prepared to present on this day</li> </ul>	Submit group slides to TA before noon (all groups)
Session 13 April 20	<p><b>Small group presentations (Session #2) and deliberation on intervention value</b></p> <ul style="list-style-type: none"> <li>Finish group presentations</li> <li>Generate/discuss a league table for interventions- what interventions are high value, which ones will we fund?</li> </ul> <p><b>Wrap-up; time allotted to complete course evaluation</b></p>	Final cost-effectiveness proposal due tomorrow (April 21 <sup>st</sup> ); submit via Sakai drop-box

### Course Assignments and Assessments

This course will include the following graded assignments that contribute to your final grade in the course. For assignment descriptions please see below. Assignment rubrics for the paper and group presentation will be posted in Sakai.

Graded Assignments	Points/Percentages of Final Course Grade
1. Participation (attendance; In-class discussions/activities)	30
2. Individual critical appraisal of published CEA	10
3. DRAFT figure of CEA model	10
2. End-of semester Group Presentation	20
3. Cost-effectiveness research protocol	30
TOTAL	100

### Assignment Descriptions

- 1. Participation (30%)**- Includes attendance, participation in small and large group discussions. The ability to participate meaningfully in class means that you have read and thought about the readings *before* class and are prepared to ask questions. Participation is not assessed by the quantity of your comments, but more so by the consistency and quality of your participation (e.g., you really listen to other comments, make relevant points about the topic and ask good questions, avoid excessive/distracting use of your phone/computer). Offering lots of caveats or opinions that are not backed by solid rationale may not be very helpful.
- 2. Group Presentation (10%)**- Several class sessions will involve in-class group exercises. Toward the end of the semester, groups will also prepare a presentation on the cost-effectiveness of an intervention for the class. Each group will consider an intervention/program to address the same health problem, and then we will “rank” the interventions in terms of relative value (i.e., create a cost-effectiveness league table). The class will vote on the condition we will address among a list of conditions associated with significant burden of disease. All group work will be explained in class and/or posted on Sakai as a “Lead-in” to the session.
- 3. Critical-appraisal of published CEA (10%)**- Using a structured form, students will assess the risk of bias and applicability of a chosen CEA. This will be due by the start of class; students will use their own appraisal during class discussion.
- 4. Cost-effectiveness paper (“research protocol”) (draft model: 10%; final paper 30%)**- Students will develop a research protocol—i.e., a proposal to conduct a cost-effectiveness study of any health program/policy/intervention. Detailed instructions will be provided during class and written instructions will be posted on Sakai.

Briefly, this will involve choosing a public health or clinical decision (and “base-case”) regarding whether to allocate resources to two or more interventions (or one intervention versus “usual-care”/no-intervention). Students then propose a set of methods that can be used to determine which intervention is the better value. The format will be (roughly) similar to a research protocol that is published in a journal or developed for grant proposal.

### Map of Competencies to Learning Objectives and Assessment Assignments

Below you will see the competency you will develop in this course, the learning objectives that comprise the competency, and the assignment in which you will practice demonstrating this competency.

<b>Competency #1</b>
Understand the basic methodology used in economic evaluations, and apply economic evaluations in the context of population health decision-making
<b>Learning Objectives</b> that comprise the competency
<ul style="list-style-type: none"> <li>• Explain the meaning of “value” in population health;</li> <li>• Describe different types of economic analyses, accurately categorize different types of published economic analyses;</li> <li>• Discuss ethical and political controversies related to the use of economic analyses in decision-making, such as healthcare policy (or public health funding), and practice guidelines</li> </ul>
<b>Assessment Assignment</b> for evidence of student attainment of competency
<ul style="list-style-type: none"> <li>• Class participation</li> <li>• Cost-effectiveness study protocol (final paper)</li> </ul>

<b>Competency #2</b>
Demonstrate the ability to design a cost-effectiveness analysis protocol to assess the value of a health intervention, program or policy
<b>Learning Objectives</b> that comprise the competency
<ul style="list-style-type: none"> <li>• Understand and apply methodological concepts such as analytic perspective, basic modeling (what it is and how it is done), and outcomes reported in economic analyses (e.g. DALY, QALY)</li> </ul>
<b>Assessment Assignment</b> for evidence of student attainment of competency
<ul style="list-style-type: none"> <li>• Cost-effectiveness study protocol (final paper)</li> </ul>

<b>Competency #3</b>
Demonstrate the ability to critically appraise published cost-effectiveness analyses
<b>Learning Objectives</b> that comprise the competency
<ul style="list-style-type: none"> <li>• Identify potential sources of bias in cost-effectiveness analyses, including the validity of cost inputs, utility measures, publication bias, and other sources of bias</li> </ul>
<b>Assessment Assignment</b> for evidence of student attainment of competency
<ul style="list-style-type: none"> <li>• Class participation</li> <li>• Group presentation</li> </ul>

## Syllabus Appendix

### Course Grading Scale

Final course grades will be determined using the following [UNC Graduate School grading scale](#). The relative weight of each course component is shown in the Graded Assignments table.

	Description	Numeric Value
<b>H</b>	High Pass: Clear excellence	93-100
<b>P</b>	Pass: Entirely satisfactory graduate work	70-92
<b>L</b>	Low Pass: Inadequate graduate work	60-70
<b>F</b>	Fail	<60

Final course grades will be determined using the following [UNC Undergraduate School grading system](#).

### Instructor Expectations:

#### Email

The instructor will typically respond to email within 24 hours or less if sent Monday through Friday. The instructor may respond to weekend emails, but it is not required of them. If you receive an out of office reply when emailing, it may take longer to receive a reply. The instructor will provide advance notice, if possible, when they will be out of the office.

#### Feedback

All graded assignments will receive written feedback that coincides with the assessment rubric. Feedback is meant to be constructive and help the student continue to build upon their skills. The types of feedback you may receive are descriptive feedback, evaluative feedback, and motivational feedback. Feedback is a tool that you as a learner can use to understand the areas that you are succeeding in and what you can do to improve in other areas.

#### Grading

Assignments will be graded no more than two weeks after the due date. Assignments that build on the next assignment will be graded within one week of the final due date. Early submissions will not be graded before the final due date.

#### Honor Code

Instructors may report suspected violations of the Honor Code, including inappropriate collaborative work or problematic use of secondary materials, to the Honor Court. Honor Court sanctions vary but may include receiving a zero for the assignment, failing the course and/or suspension from the university. See Additional Resources and Policies for additional information.

#### Inclusive Excellence

In this class, we practice the Gillings School's commitment to inclusion, diversity, and equity in the following ways. See Additional Resources and Policies for additional information.

- Develop classroom participation approaches that acknowledge the diversity of ways of contributing in the classroom and foster participation and engagement of *all* students.
- Structure assessment approaches that acknowledge different methods for acquiring knowledge and demonstrating proficiency.
- Encourage and solicit feedback from students to continually improve inclusive practices.

### **Syllabus Changes**

The instructor reserves the right to make changes to the syllabus, including topics, readings, assignments, and due dates. Any changes will be announced as early as possible. For session-by-session course schedule details, please see above in the “Course-at-a-Glance” section.

### **Telephone Messages**

Email communication is preferred, and voice mails will not be returned.

### **Student Expectations:**

#### **Appropriate Use of Course Resources**

The materials used in this class, including, but not limited to, syllabus, exams, quizzes, and assignments are copyright protected works. Any unauthorized copying of the class materials is a violation of federal law and may result in disciplinary actions being taken against the student. Additionally, the sharing of class materials without the specific, express approval of the instructor may be a violation of the University's Student Honor Code and an act of academic dishonesty, which could result in further disciplinary action. This includes, among other things, uploading class materials to websites for the purpose of sharing those materials with other current or future students.

#### **Helpful and Interesting Websites**

- Submit CDC Webcast series on Economic Evaluation: [CDC Resources on Economic Evaluation](#)
- Institute for Clinical and Economic Review: <https://icer-review.org/>
- Consumer reports “*Choosing Wisely*” Campaign: [Choosing Wisely](#)
- NPR/Kaiser “Bill of the Month” series: [NPR Bill of the Month Explained](#)

#### **Assignments**

Submit all assignments through Sakai or assignment links located in the weekly modules, syllabus link, or assignments link (if made available by your instructor). Emailing assignments is not acceptable unless prior arrangements have been made. If you are having issues submitting assignments, try a different web browser first. If switching browsers does not work, email or call the instructor for guidance.

#### **Attendance/ Participation**

Your attendance and active participation are an integral part of your learning experience in this course. If you are unavoidably absent, please notify the course instructor and teaching assistant.

#### **Communication**

You are expected to follow common courtesy in all communication to include email, discussion forums, and face-to-face. All electronic communications sent should follow proper English grammar

rules to include complete sentences. This is a professional course, and you are expected to communicate as a professional.

### **Contributions**

You are expected to offer individual contributions in class and on individual assignments, and collaborate with fellow students on assignments for which students may work together, such as group assignments.

### **Email**

All email correspondence between student/instructor and peer/peer will be conducted in a professional manner.

### **Honor Code**

To ensure effective functioning of the [Honor System](#) at UNC, students are expected to:

- Conduct all academic work within the letter and spirit of the Honor Code, which prohibits the giving or receiving of unauthorized aid in all academic processes.
- Learn the recognized techniques of proper attribution of sources used in written work; and to identify allowable resource materials or aids to be used during completion of any graded work.

See Additional Resources and Policies for additional information.

### **Inclusive Excellence**

In this class, we practice the Gillings School's commitment to inclusion, diversity, and equity in the following ways. See Additional Resources and Policies for additional information.

- Treat all members of the Gillings community (students, faculty, and staff) as human persons of equal worth who deserve dignity and respect, even in moments of conflict and disagreement.
- Contribute to creating a welcoming and inclusive classroom environment, where all are able to learn and grow from one another.
- Acknowledge and respect the diversity of experiences that others bring to the classroom and the ways in which this richness enhances everyone's learning
- Strive to maintain a spirit of curiosity and generosity, particularly in the face of new and/or seemingly contradictory information and perspectives Encourage and solicit feedback from students to continually improve inclusive practices.

### **Late Work**

Late work will not be accepted.

### **Readings**

Readings for a particular class should be completed before the class session and before completing associated activities

### **Technical support**

The best way to help prevent technical issues from causing problems for assignments and quizzes is to submit them at least 24-36 hours before the due date and time. Your instructor cannot resolve technical issues, but it's important to notify them if you are experiencing issues. If you have problems submitting an assignment or taking a quiz in Sakai, immediately do the following:

1. Contact the UNC Information Technology Services (ITS) department with the time you attempted to do your course action and what the course action was.
2. Email your instructor with the information you sent to ITS and what time you sent the information.

The ITS department provides technical support 24-hours per day, seven days per week. If you need computer help, please contact the ITS Help Desk by phone at +1-919-962-HELP (919-962-4357), or by online help request at <http://help.unc.edu/help/olhr>, or by UNC Live Chat at <http://help.unc.edu/chat>.

## Additional Resources and Policies

### Accessibility at UNC Chapel Hill

UNC-CH supports all reasonable accommodations, including resources and services, for students with disabilities, chronic medical conditions, a temporary disability, or a pregnancy complication resulting in difficulties with accessing learning opportunities. All accommodations are coordinated through the UNC Office of Accessibility Resources & Services (ARS), <https://ars.unc.edu/>; phone 919-962-8300; email [ars@unc.edu](mailto:ars@unc.edu). Students must document/register their need for accommodations with ARS before accommodations can be implemented.

### Counseling and Psychological Services at UNC Chapel Hill

CAPS is strongly committed to addressing the mental health needs of a diverse student body through timely access to consultation and connection to clinically appropriate services, whether for short or long-term needs. Go to their website: <https://caps.unc.edu>, call them at 919-966-3658, or visit their facilities on the third floor of the Campus Health Services building for a walk-in evaluation to learn more.

### Gillings School Diversity Statement

We are committed to expanding diversity and inclusiveness across the School — among faculty, staff, students, on advisory groups, and in our curricula, leadership, policies and practices. We measure diversity and inclusion not only in numbers, but also by the extent to which students, alumni, faculty, and staff members perceive the School's environment as welcoming, valuing all individuals, and supporting their development.

For more information about how we are practicing inclusive excellence at the Gillings School, visit our *Diversity and Inclusion* webpages:

- Diversity and Inclusion:  
<https://sph.unc.edu/resource-pages/diversity/>
- Minority Health Conference:  
<http://minorityhealth.web.unc.edu/>
- National Health Equity Research Webcast:  
<https://sph.unc.edu/mhp/nat-health-equity-research-webcast/>

### Gillings School Office of Student Affairs

<https://sph.unc.edu/students/osa/>

### Honor Code

As a student at UNC Chapel Hill, you are bound by the university's [Honor Code](#), through which UNC maintains standards of academic excellence and community values. It is your responsibility to learn about and abide by the code. All written assignments or presentations (including team projects) should be completed in a manner that demonstrates academic integrity and excellence. Work should be completed in your own words, but your ideas should be supported with well-cited evidence and theory. If you have any questions about [your rights and responsibilities](#), please consult the Office of Student Conduct (<https://studentconduct.unc.edu/>) or review the following resources:

- Honor System

<https://studentconduct.unc.edu/honor-system>

- Honor system module

<https://studentconduct.unc.edu/students/honor-system-module>

- UNC Library's plagiarism tutorial

<https://guides.lib.unc.edu/plagiarism>

- UNC Writing Center's handout on plagiarism

<https://writingcenter.unc.edu/tips-and-tools/plagiarism/>

### LGBTQ Center

<https://lgbtq.unc.edu/>

### Non-Discrimination Policies at UNC Chapel Hill

<https://eoc.unc.edu/our-policies/policy-statement-on-non-discrimination/>

### Ombuds

<https://ombuds.unc.edu/>

### Prohibited Discrimination, Harassment, and Related Misconduct at UNC Chapel Hill

<https://deanofstudents.unc.edu/incident-reporting/prohibited-harassmentsexual-misconduct>

### Title IX at UNC Chapel Hill

Acts of discrimination, harassment, interpersonal (relationship) violence, sexual violence, sexual exploitation, stalking, and related retaliation are prohibited at UNC-Chapel Hill. If you have experienced these types of conduct, you are encouraged to report the incident and seek resources on campus or in the community. Please contact the Director of Title IX Compliance / Title IX Coordinator (Adrienne Allison, [adrienne.allison@unc.edu](mailto:adrienne.allison@unc.edu)), Report and Response Coordinators (Ew Quimbaya-Winship, [eqw@unc.edu](mailto:eqw@unc.edu); Rebecca Gibson, [rmgibson@unc.edu](mailto:rmgibson@unc.edu); Kathryn Winn [kmwinn@unc.edu](mailto:kmwinn@unc.edu)), Counseling and Psychological Services (CAPs) (confidential) in Campus Health Services at 919-966-3658, or the Gender Violence Services Coordinators (confidential) Cassidy Johnson, [cassidyjohnson@unc.edu](mailto:cassidyjohnson@unc.edu); Holly Lovern, [holly.lovern@unc.edu](mailto:holly.lovern@unc.edu) to discuss your specific needs. Additional resources are available at [safe.unc.edu](https://safe.unc.edu).

### Writing Center

<https://writingcenter.unc.edu/>