

# Assessment of Medical Technologies

## PopHealth/ISyE 875

### Fall 2016

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*Syllabus: January 19, 2016*

## Overview

The overall goal of this course is to introduce you to the key concepts of health technology assessment, with a focus on cost-effectiveness analysis. This field is multidisciplinary and policy-oriented: this means that there are many possible angles from which to teach the material, and a fair deal of context (and pretext) behind it. It also means, quite simply, that there is a lot of challenging material and many different ways to do basically the same thing and substantial disagreement about what is the “best” way. It is impossible to cover every interesting topic (much less every important one!) from every angle in a single course. Upon completing this course, you should have enough understanding of the methods and practice of technology assessment to be able to critically assess technology appraisals and their related academic literature. Beyond that, you should also become equipped with the tools necessary to begin to do your own technology assessment research and to be able to find further information and reach out to collaborators (and perhaps most importantly, to know when it is necessary to find further information and reach out to collaborators!).

## Learning Objectives

More specifically, at the conclusion of this course, you should be able to:

- Apply basic concepts of economic analysis to the assessment of medical technologies and healthcare interventions more broadly;
- Conceptualize health outcomes on a range from objective measures of physical systems to subjective preference-based measures of health utility and describe the benefits and limitations of using quality-adjusted life years (QALYs) as a health outcome measure;
- Explain why we seek to obtain estimates of the “opportunity cost” of using health care resources, describe the process of “costing” in economic assessments of medical technologies and identify useful sources of information for obtaining cost information (and their limitations);
- Describe how primary data from randomized controlled trials and observational studies can be designed to assess medical technologies and explain the advantages and disadvantages of different designs in terms of their internal and external validity and decision-relevance;
- Describe how evidence from secondary data can be integrated using systematic reviews, meta-analysis and decision-analytic modeling methods can be used to assess medical technologies and demonstrate basic ability to design and execute simple decision tree and Markov models for cost-effectiveness analysis.

## Expectations and Assessments

**Readings and Videos.** You are expected to read all core readings and discussion papers and to watch all required video presentations prior to coming to class (see schedule on last page of syllabus). On all class days (except on which take-home exams are due), you will be expected to submit via email to [dvanness@wisc.edu](mailto:dvanness@wisc.edu) a set of five to ten discussion questions before 9am. There should be at least one question for each assigned discussion paper or video, and at least one answer of each of the following 3 types: 1) What is the most important concept in the paper/video and why? 2) What important concept in the paper did you find confusing / needs clarification and why? 3) How does this paper help you understand either of the technology appraisal case studies. Submitted questions will be graded on a scale of 0-2 points based on quality. Discussion questions submitted between 9am and class time on the date due will be docked 1 point; questions not received by class time on the due date will receive 0 points.

**Technology Appraisal Case Studies.** The following two technology appraisals will serve as case studies throughout the course. You should explore them as soon as possible and then re-read sections in greater detail as you learn more about the underlying concepts and methods.

- NICE Technology Appraisal: Trastuzumab emtansine for treating HER2-positive, unresectable locally advanced or metastatic breast cancer after treatment with trastuzumab and a taxane <http://www.nice.org.uk/guidance/ta371>
- US Preventive Services Task Force: Breast Cancer Screening <http://screeningforbreastcancer.org/>

On the final day of class, we will hold a panel discussion of the USPSTF Breast Cancer Screening recommendations. A final report relating to the recommendations will be due one week following the last class.

**Take Home Exams.** There will be three take home exams, one each assigned after the conclusion of modules 2, 4 and 6. Exams must be submitted via email to [dvanness@wisc.edu](mailto:dvanness@wisc.edu) before class on the due date. Late take-home exams will be docked 2 points per day. In general, minor errors will receive a 0.5 point deduction and major errors will receive a 1-2 point deduction. You may discuss your answers with your classmates, but you are expected to complete your own work in accordance with UW academic honesty policies (<http://pubs.wisc.edu/home/archives/gopher/special93/00000136.html>).

**Final Report.** You will be expected to prepare a final report using principles of health technology assessment to critique the draft USPSTF Breast Cancer Guidelines. Details will be provided in a final assignment. The final report must be submitted via email to [dvanness@wisc.edu](mailto:dvanness@wisc.edu) before noon Thursday May 12. Late submissions will be docked 0.5 points per hour.

## Grading Policy

Points will be allocated to the discussion questions, take-home exams and final report according to the schedule on the last page of the syllabus. Final grades will be assigned according to the following scheme:

- 90 – 100+ points : A
- 85 – 89 points: AB
- 80 – 84 points: B
- <80 points: BC
- Any missing take-home exam or final report: F

## Textbooks

None required. All readings are available via links provided in syllabus. You may need to use an internet connection on campus to access them online.

# Module 1: Introduction and Overview of the Assessment of Medical Technologies

## Core Readings:

- Goodman C. HTA 101: I. Introduction
- Goodman C. HTA 101: II. Fundamental Concepts
- Goodman C. HTA 101: VI. Determine Topics

Available at: [https://www.nlm.nih.gov/nichsr/hta101/HTA\\_101\\_FINAL\\_7-23-14.pdf](https://www.nlm.nih.gov/nichsr/hta101/HTA_101_FINAL_7-23-14.pdf)

## Discussion Papers:

- Bach PB, Saltz LB, Wittes RE. In cancer care, cost matters. New York Times. 2012 Oct 14;14. <http://www.canceradvocacy.org/wp-content/uploads/2013/10/Cost-of-Care-P-Back-L-Saltz-and-R-Wittes.pdf>
- Herper M. '60 Minutes' Just Attacked High Drug Prices. Here's What You Should Know. <http://www.forbes.com/sites/matthewherper/2014/10/05/60-minutes-just-attacked-high-drug-prices-heres-what-you-should-know/>
- Kantarjian HM, Fojo T, Mathisen M, Zwelling LA. Cancer drugs in the United States: Justum Pretium—the just price. Journal of Clinical Oncology. 2013 Oct 1;31(28):3600-4. <http://jco.ascopubs.org/content/31/28/3600.short>

## Video:

- HTA 101: 2011 Update on Introduction to Health Technology Assessment Presenter: Cliff Goodman<sup>1</sup>, Senior Vice President and Principal, The Lewin Group <https://www.nlm.nih.gov/nichsr/htawebinars/>

## Useful Resources:

- University of York Centre for Reviews and Dissemination: <http://www.crd.york.ac.uk/CRDWeb/>
- AHRQ Healthcare Horizon Scanning System: <http://effectivehealthcare.ahrq.gov/index.cfm/who-is-involved-in-the-effective-health-care-program1/ahrq-horizon-scanning-system/>

## Module 2: Principles of Economic Evaluation in Healthcare

### Core Reading:

- Gray AM, Clarke PM, Wolstenholme JL and Wordsworth S. Economic evaluation in health care. Applied Methods of Cost-effectiveness Analysis in Health Care. Chapter 2. Oxford: Oxford University Press, 2011. <https://patron.library.wisc.edu/authn/splash?url=http://wisc.ebib.com/patron/FullRecord.aspx?p=975569>

### Discussion Papers:

- Neumann PJ, Cohen JT, Weinstein MC. Updating cost-effectiveness—the curious resilience of the \$50,000-per-QALY threshold. New England Journal of Medicine. 2014 Aug 28;371(9):796-7. <http://centerforvaccineethicsandpolicy.net/2014/08/30/updating-cost-effectiveness-the-curious-resilience-of-the-50000-per-qaly-threshold/>
- Durkee BY, Qian Y, Pollom EL, King MT, Dudley SA, Shaffer JL, Chang DT, Gibbs IC, Goldhaber-Fiebert JD, Horst KC. Cost-effectiveness of pertuzumab in human epidermal growth factor receptor 2–positive metastatic breast cancer. Journal of Clinical Oncology. 2015 Sep 8;JCO-2015. <http://jco.ascopubs.org/content/early/2015/09/03/JCO.2015.62.9105.full>
- Bach PB. Walking the Tightrope Between Treatment Efficacy and Price. Journal of Clinical Oncology. 2015 Sep 8;JCO-2015. <http://jco.ascopubs.org/content/early/2015/09/03/JCO.2015.63.7397.short>

### Videos:

- Value for Money: How Cost-Effectiveness Analysis Contributes to Better Health: Louise B. Russell, PhD, Rutgers Institute for Health, Health Care Policy, and Aging Research, April 21, 2014. <https://www.youtube.com/watch?v=sxnUyGBaez0>
- Cost Effectiveness in Medicine is not a Dirty Word: Aaron Carroll, MD, MS, Indiana University School of Medicine, March 2, 2015. <https://www.youtube.com/watch?v=RSBaEz10sQk>

## Module 3: Measuring Health Outcomes, Health-Related Quality of Life and Health Utility

### Core Readings:

- Gray AM, Clarke PM, Wolstenholme JL and Wordsworth S. Measuring, valuing, and analyzing health outcomes. Applied Methods of Cost-effectiveness Analysis in Health Care. Oxford: Oxford University Press, 2011. Chapter 5 (83-118) <https://patron.library.wisc.edu/authn/splash?url=http://wisc.ebib.com/patron/FullRecord.aspx?p=975569>
- Walton MK, Powers JA, Hobart J, et al. Clinical outcome assessments: A conceptual foundation – Report of the ISPOR Clinical Outcomes Assessment Emerging Good Practices Task Force. Value Health 2015; 18:741-52. <http://www.ispor.org/clinical-outcomes-assessment-guidelines.pdf>
- Weinstein MC, Torrance G, McGuire A. QALYs: the basics. Value in health. 2009 Mar 1;12(s1):S5-9. <http://www.ispor.org/meetings/Invitational/QALY/Paper2revised.PDF>

### Discussion Papers:

- Pyne JM, Fortney JC, Tripathi S, Feeny D, Ubel P, Brazier J. How bad is depression? Preference score estimates from depressed patients and the general population. Health services research. 2009 Aug 1;44(4):1406-23. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2739035/>
- Leidy NK, Wilcox TK, Jones PW, Murray L, Winnette R, Howard K, Petrillo J, Powers J, Sethi S. Development of the EXacerbations of Chronic Obstructive Pulmonary Disease Tool (EXACT): A Patient-Reported Outcome (PRO) Measure. Value in Health. 2010 Dec 1;13(8):965-75. <http://onlinelibrary.wiley.com/doi/10.1111/j.1524-4733.2010.00772.x/full>
- Leidy NK, Wilcox TK, Jones PW, Roberts L, Powers JH, Sethi S. Standardizing measurement of chronic obstructive pulmonary disease exacerbations: reliability and validity of a patient-reported diary. American journal of respiratory and critical care medicine. 2011 Feb 1;183(3):323-9. <http://www.atsjournals.org/doi/abs/10.1164/rccm.201005-0762OC#.Vo66TVnnLI4>
- Petrillo J, Cairns J. Development of the EXACT-U: a preference-based measure to report COPD exacerbation utilities. Value in Health. 2011 Jun 30;14(4):546-54. <http://www.sciencedirect.com/science/article/pii/S1098301510000495>
- Marra CA, Woolcott JC, Kopec JA, Shojania K, Offer R, Brazier JE, Esdaile JM, Anis AH. A comparison of generic, indirect utility measures (the HUI2, HUI3, SF-6D, and the EQ-5D) and disease-specific instruments (the RAQoL and the HAQ) in rheumatoid arthritis. Social science & medicine. 2005 Apr 30;60(7):1571-82. <http://www.sciencedirect.com/science/article/pii/S0277953604003843>
- Drummond M, Brixner D, Gold M, Kind P, McGuire A, Nord E. Toward a consensus on the QALY. Value in Health. 2009 Mar 1;12(s1):S31-5. <http://www.ispor.org/meetings/Invitational/QALY/Paper7.pdf>

### Videos:

- Assessing Utilities: How Much Risk Are You Willing to Take? Aaron Carroll, MD MS, Indiana University School of Medicine, Feb. 23, 2015. <https://www.youtube.com/watch?v=UeKQ7kBc33w>
- Integrating patient reported outcomes data - real time information for research and clinical care. Amy Abernethy, MD PhD, Director of Center for Learning Health Care, Duke Clinical Research Institute, July 26, 2013. <https://www.youtube.com/watch?v=5hZTwVmJRA0>
- What is PROMIS? Nan Rothrock, PhD, Northwestern University, January 24, 2013 <https://www.youtube.com/watch?v=PokSt7NCsEw>



## Module 4: Measuring Healthcare Costs

### Core Readings:

- Muennig, Peter. Working with Costs. *Cost-effectiveness analysis in health: a practical approach*. Chapter 4. John Wiley & Sons, 2007. <https://search.library.wisc.edu/catalog/9911041060502121> (Go to Academic Complete)
- Fishman PA, Hornbrook MC. Assigning resources to health care use for health services research: options and consequences. *Medical care*. 2009 Jul;47(7 Suppl 1):S70. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3588569/>

### Discussion Papers:

- Neumann PJ. What we talk about when we talk about health care costs. *New England Journal of Medicine*. 2012 Feb 16;366(7):585-6. <http://www.nejm.org/doi/full/10.1056/NEJMp1200390>
- Cohen DJ, Bakhai A, Shi C, Githiora L, Lavelle T, Berezin RH, Leon MB, Moses JW, Carrozza JP, Zidar JP, Kuntz RE. Cost-effectiveness of sirolimus-eluting stents for treatment of complex coronary stenoses results from the sirolimus-eluting balloon expandable stent in the treatment of patients with de novo native coronary artery lesions (SIRIUS) Trial. *Circulation*. 2004 Aug 3;110(5):508-14. <http://circ.ahajournals.org/content/110/5/508.full>

### Videos:

- Health Care Database Shows INSANE Differences in Prices! John Idarola, May 16, 2013. <https://www.youtube.com/watch?v=6l91oxYwLF0>
- The True Cost of Health Care, David Belk, MD. <http://truecostofhealthcare.org> February 15, 2013. <https://www.youtube.com/watch?v=r9q1ld41wGo>

### Useful Resources:

- Barnett PG. An improved set of standards for finding cost for cost-effectiveness analysis. *Medical care*. 2009 Jul 1;47(7\_Supplement\_1):S82-8. [http://journals.lww.com/lww-medicalcare/fulltext/2009/07001/an\\_improved\\_set\\_of\\_standards\\_for\\_finding\\_cost\\_for.14.aspx](http://journals.lww.com/lww-medicalcare/fulltext/2009/07001/an_improved_set_of_standards_for_finding_cost_for.14.aspx)
- The main methodological issues in *costing health care* services. A literature review. <https://www.york.ac.uk/che/pdf/rp7.pdf>
- Glick, HA. Practical Costing. University of Pennsylvania. <http://www.ups.upenn.edu/dgimhsr/documents/hgmg901.practicalcosting.fl15.pdf>

## Module 5: Primary Data Methods

### Core Reading:

- Goodman C. HTA 101: III. Primary Data Methods [https://www.nlm.nih.gov/nichsr/hta101/HTA\\_101\\_FINAL\\_7-23-14.pdf](https://www.nlm.nih.gov/nichsr/hta101/HTA_101_FINAL_7-23-14.pdf)

### Discussion Papers:

- Ioannidis JP, Khoury MJ. Are randomized trials obsolete or more important than ever in the genomic era? *Genome Med.* 2013;5(4):32. [PubMed](#) | [PMC free article](#).
- Printz C. I-SPY 2 may change how clinical trials are conducted: Researchers aim to accelerate approvals of cancer drugs. *Cancer.* 2013;119(11):1925-7. [PubMed](#).
- Black WC. Computed tomography screening for lung cancer in the National Lung Screening Trial: a cost-effectiveness analysis. *Journal of thoracic imaging.* 2015 Mar 1;30(2):79-87. [http://journals.lww.com/thoracicimaging/Fulltext/2015/03000/Computed\\_Tomography\\_Screening\\_for\\_Lung\\_Cancer\\_in.2.aspx](http://journals.lww.com/thoracicimaging/Fulltext/2015/03000/Computed_Tomography_Screening_for_Lung_Cancer_in.2.aspx)

### Videos:

- Randomized Controlled Trials vs. Observational Studies <https://www.youtube.com/watch?v=CDXKTrjFqdl> May 22, 2011 Dr. Michael Lauer, director of the Division of Cardiovascular Studies at the National Heart, Lung and Blood Institute at NIH.
- Randomized Controlled Trials & CER <https://www.youtube.com/watch?v=7Eg14YpOTMY> May 22, 2011 Dr. Robert Dubois, chief science officer at the National Pharmaceutical Council.
- The Value of Observational data in CER <https://www.youtube.com/watch?v=4oOmA64Itj4> August 28, 2012 Bill Marder, PhD, Executive Director, Center for Comparative Effectiveness Research, Senior Vice President and General Manager at Truven Health Analytics.
- Is It Time to Retire the Randomized Controlled Trial? David Sackett, OC, FRSC, MD, MSc, FRCP, Professor Emeritus, Clinical Epidemiology & Biostatistics, McMaster University, Hamilton, ON, Canada <http://www.ispor.org/EducationalVideos/RCT/RCT.htm>
- Ramsey SD, Willke RJ, Glick HA, et al. Cost-effectiveness analysis alongside clinical trials II: An ISPOR good research practices task force report. *Value Health* 2015; 18:161-172 <http://www.ispor.org/education/Webinars/CEA-Alongside-ClinicalTrials.aspx>

### Useful Tools:

- Dreyer NA, Schneeweiss S, McNeil BJ, Berger ML, et al. GRACE principles: recognizing high-quality observational studies of comparative effectiveness. *Am J Manag Care.* 2010;16(6):467-71. [PubMed](#) | [Publisher free article](#).
- Whiting PF, Rutjes AW, Westwood ME, Mallett S, et al.; QUADAS-2 Group. QUADAS-2: a revised tool for the quality assessment of diagnostic accuracy studies. *Ann Intern Med.* 2011;155(8):529-36. [PubMed](#).
- Jadad AR, Moore RA, Carrol D, et al. Assessing the quality of reports of randomized clinical trials: Is blinding necessary? *Control Clin Trials.* 1996;17:1-12. [PubMed](#).



## Module 6: Integrative Methods and Modeling

### Core Readings:

- Goodman C. HTA 101: IV. INTEGRATIVE METHODS  
[https://www.nlm.nih.gov/nichsr/hta101/HTA\\_101\\_FINAL\\_7-23-14.pdf](https://www.nlm.nih.gov/nichsr/hta101/HTA_101_FINAL_7-23-14.pdf)
- Gray AM, Clarke PM, Wolstenholme JL and Wordsworth S. Applied Methods of Cost-effectiveness Analysis in Health Care. Oxford: Oxford University Press, 2011. <https://patron.library.wisc.edu/authn/splash?url=http://wisc.ebib.com/patron/FullRecord.aspx?p=975569>

Chapter 8 – Decision analytic modelling: decision trees

Chapter 9 – Decision analytic modelling: Markov models

Chapter 10 – Representing uncertainty in decision analytic models

### Discussion Papers:

- Eckman MH, Rosand J, Greenberg SM, Gage BF. Cost-effectiveness of using pharmacogenetic information in warfarin dosing for patients with nonvalvular atrial fibrillation. Annals of internal medicine. 2009 Jan 20;150(2):73-83. <http://www.pmthc.com/news/genetic-testing/Cost-Effectiveness%20of%20Using%20Pharmacogenetic%20Information%20in%20Warfarin.pdf>
- Egger M, Smith GD. Meta-analysis: potentials and promise. Bmj. 1997 Nov 22;315(7119):1371-4. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2127866/pdf/9432250.pdf>

### Videos:

- Decision Trees for CEA. Phillip R. Lee Institute for Health Policy Studies. October 15, 2014. [https://www.youtube.com/watch?v=EJ6HCne-dCY&index=9&list=PLPdSQGGMt89e4\\_ObAbU8F8ZASfgAoNVH9](https://www.youtube.com/watch?v=EJ6HCne-dCY&index=9&list=PLPdSQGGMt89e4_ObAbU8F8ZASfgAoNVH9)
- Simulation for Health Economics Analysis. June 21, 2013. Ronald Shannon, MPH, Global Health Economic Projects, LLC, Fiona Lindsay, SIMUL8 Corporation <https://www.youtube.com/watch?v=U7zUtRk6NuQ>
- Intro to Systematic Review and Meta-Analysis. June 1, 2014. Rahul Patwari <https://www.youtube.com/watch?v=WB9pbHqUs5c>
- The New Statistics: Meta-Analysis and Meta-Analytic Thinking (workshop Part 6). September 2014. Geoff Cumming, Latrobe University, <https://www.youtube.com/watch?v=2CBIQDoHCKU>

### Useful Tools:

- Methods Guide for Effectiveness and Comparative Effectiveness Reviews. AHRQ Publication No. 10(14)-EHC063-EF. Rockville, MD: Agency for Healthcare Research and Quality. January 2014. <http://effectivehealthcare.ahrq.gov/ehc/products/60/318/CER-Methods-Guide-140109.pdf>
- Normand SL. Tutorial in biostatistics meta-analysis: formulating, evaluating, combining, and reporting. Statistics in medicine. 1999 Feb 1;18(3):321-59. [http://psych.colorado.edu/~willcutt/pdfs/Normand\\_1999.pdf](http://psych.colorado.edu/~willcutt/pdfs/Normand_1999.pdf)
- Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. Annals of internal medicine. 2009 Aug 18;151(4):264-9. <http://annals.org/article.aspx?articleid=744664>

## Module 6 Useful Tools (Continued):

- Roberts M, Russell LB, Paltiel AD, et al. Conceptualizing a model: A report of the ISPOR-SMDM modeling good research practices task force-2. Value Health 2012;15:804-11. [http://www.ispor.org/workpaper/Modeling\\_Methods/Conceptualizing\\_a\\_Model-2.pdf](http://www.ispor.org/workpaper/Modeling_Methods/Conceptualizing_a_Model-2.pdf) ; Webinar: <http://www.ispor.org/education/Webinars/ConceptualizingAModel2014.aspx>
- Siebert U, Alagoz O, Bayoumi AM, et al. State-transition modeling: A report of the ISPOR-SMDM modeling good research practices task force-3. Value Health 2012;15:812-20. [http://www.ispor.org/workpaper/Modeling\\_Methods/State-Transition\\_Modeling-3.pdf](http://www.ispor.org/workpaper/Modeling_Methods/State-Transition_Modeling-3.pdf); Webinar: <http://www.ispor.org/education/webinars/state-transition-modeling.aspx>
- Briggs AH, Weinstein MC, Fenwick E, et al. Model parameter estimation and uncertainty analysis: A report of the ISPOR-SMDM modeling good research practices task force-6. Value Health 2012;15:835-42. [http://www.ispor.org/workpaper/Modeling\\_Methods/Model\\_Parameter\\_Estimation\\_and\\_Uncertainty-6.pdf](http://www.ispor.org/workpaper/Modeling_Methods/Model_Parameter_Estimation_and_Uncertainty-6.pdf) ; Webinar: <http://www.ispor.org/education/webinars/Model-Parameter-EstimationGRP11212013.aspx>

## Module 7: Consensus Panel: Evaluation of Proposed USPSTF Guidance on Breast Cancer Screening

### Core Reading:

US Preventive Services Task Force: Breast Cancer Screening <http://screeningforbreastcancer.org/>

### Discussion Paper:

- Pauly MV, Sloan FA, Sullivan SD. An Economic Framework for Preventive Care Advice. Health Affairs. 2014 Nov 1;33(11):2034-40. <http://content.healthaffairs.org/content/33/11/2034.full>

## Schedule:

Session	Date	Requirements	Assessments	Points
		<b>Introduction and Overview of the Assessment of Medical Technologies</b>		
1	1/21/2016	Core Readings: Goodman I, II and VI Video: HTA 101		
2	1/28/2016	Discussion Papers: Bach, Herper and Kantarajian	Discussion Questions	2
		<b>Module 2 Principles of Economic Evaluation in Healthcare</b>		
3	2/4/2016	Core Reading: Gray Chapter 2 Discussion Paper: Neumann Video: Russell	Discussion Questions	2
4	2/11/2016	Discussion Papers: Durkee, Bach Video: Carroll	Discussion Questions Take Home Exam 1 Assigned	2
		<b>Module 3 Measuring Health Outcomes, Health-Related Quality of Life and Health Utility</b>		
5	2/18/2016	Core Reading: Gray Chapter 5 Discussion Paper: Pyne Video: Carroll	Take Home Exam 1 Due	20
6	2/25/2016	Core Reading: Walton Discussion Papers: Leidy (both papers), Petrillo, Marra Videos: Abernethy, Rothrock	Discussion Questions	2
7	3/3/2016	Core Reading: Weinstein Discussion Paper: Drummond	Discussion Questions	2
		<b>Module 4 Measuring Healthcare Costs</b>		
8	3/10/2016	Core Reading: Muennig Discussion Paper: Neumann Video: Idarola	Discussion Questions	2
9	3/17/2016	Core Reading: Fishman Video: Belk Discussion Paper: Cohen	Discussion Questions Take Home Exam 2 Assigned	2
		<b>Module 5 Primary Data Methods</b>		
10	3/31/2016	Core Reading: Goodman III Discussion Papers: Ioannidis, Printz Videos: Lauer, Dubois, Marder, Sackett	Take Home Exam 2 Due	20
11	4/7/2016	Discussion Paper: Black Video: Ramsey	Discussion Questions	2
		<b>Module 6 Integrative Methods and Modeling</b>		
12	4/14/2016	Core Reading: Goodman IV, Gray Chapter 8 Video: Decision Trees for CEA	Discussion Questions	2
13	4/21/2016	Core Reading: Gray Chapter 9 Discussion Paper: Eckman Video: Shannon	Discussion Questions	2
14	4/28/2016	Core Reading: Gray Chapter 10 Discussion Paper: Egger Video: Patwari, Cumming	Discussion Questions Take Home Exam 3 Assigned	2
		<b>Module 7 Consensus Panel: Evaluation of Proposed USPSTF Guidance on Breast Cancer Screening</b>		
15	5/5/2016	Core Reading: USPSTF Draft Report and Supporting Materials Discussion Paper: Pauly	Take Home Exam 3 Due	20
		<b>Final Report Critique of Proposed USPSTF Guidance on Breast Cancer Screening</b>		
	5/12/2016		Final Report Due	20