

PHA5267: Principles of Pharmacoeconomics

Fall 2022

1 Credit Hour – [A-E Grading]

The purpose of this course is to introduce students to the fundamental methods of pharmacoeconomic analysis. Topics include the terminology used in pharmacoeconomics, research methods frequently used in pharmacoeconomics, and the role of pharmacoeconomics in the drug development process and health care decision making relevant to the practice of pharmacy. These principles will prepare the student for future coursework where the student will develop and implement individualized treatment plans, taking into consideration pharmacoeconomic factors.

Teaching Partnership Leaders

Hui Shao, M.D., Ph.D.

- Email: hui.shao@cop.ufl.edu
- Office: HPNP 3339
- Phone: 352-294-8323

Office Hours: Please see the Canvas course site for posted office hours

Haesuk Park, Ph.D.

- Email: hpark@cop.ufl.edu
- Office: HPNP 3325
- Phone: 352-273-6261

Office Hours: Please see the Canvas course site for posted office hours

See Appendix A. for Course Directory of Faculty and Staff Contact Information.

Entrustable Professional Activities

This course will prepare you to perform the following activities which the public entrusts a Pharmacist to perform:

1. 12. Use evidence-based information to advance patient care.
2. ST12.1 Retrieve and analyze scientific literature to make a patient-specific recommendation.

Course-Level Objectives

Upon completion of this course, the student will be able to:

1. Describe fundamental concepts behind rationing and economic evaluation of health care.
2. Explain the role of pharmacoeconomics in the drug development process and health care decision making.
3. Identify the role of perspective in the selection of study parameters and their impact on study design, costs, and the interpretation of results.
4. Define and describe cost-minimization analysis, cost-effectiveness analysis, cost-utility analysis, and cost-benefit analysis.
5. Outline strengths and weaknesses of standard pharmacoeconomic approaches to assess the economic impact of pharmaceutical interventions, including cost-minimization analysis, cost-effectiveness analysis, cost-utility analysis, and cost-benefit analysis.
6. Explain decision making tools such as cost-effectiveness and cost-benefit analysis and discuss their application to resource allocation, how these tools are used in practice, and what factors limit their use or interpretation.
7. Summarize applications of economic, clinical, and humanistic outcomes to improve allocation of limited health care resources and interpret pharmacoeconomic studies.
8. Apply knowledge of pharmacoeconomic approaches for performing a decision analysis
9. Describe the importance of measuring health-related quality of life.
10. Define the methods for assessing the psychometric properties of health-related quality of life instruments, such as reliability, validity and responsiveness.
11. Critique the results of articles that use the following analyses that measure and estimate costs:
 - a. Cost-minimization analysis
 - b. Cost-effectiveness analysis
 - c. Cost-utility analysis
 - d. Cost-benefit analysis
 - e. Decision analysis

Course Pre-requisites

Completion of all Year 1 Pharm.D. program coursework including milestones.

Course Co-requisites

None

Course Outline

See Appendix. Please routinely check your campus calendar and the Canvas course site for any messages about changes in the schedule including meeting dates/times, deadlines, and room changes.

Required Textbooks/Readings

1. Rascati, Karen L. *Essentials of Pharmacoeconomics: Health Economics and Outcomes Research*. Wolters Kluwer, 2014.
 - Available via HSC Library
 - https://ufl-flvc.primo.exlibrisgroup.com/discovery/fulldisplay?context=L&vid=01FALSC_UFL:UFL&search_scope=MyInstitution&tab=LibraryCatalog&docid=alma990340475170306597

2. Spencer, Jennifer C., Noel T. Brewer, Justin G. Trogon, Morris Weinberger, Tamera Coyne-Beasley, and Stephanie B. Wheeler. "Cost-Effectiveness of Interventions to Increase HPV Vaccine Uptake." *Pediatrics* 146, no. 6 (December 1, 2020). <https://doi.org/10.1542/peds.2020-0395>.
3. Herman, William H., Thomas J. Hoerger, Michael Brandle, Katherine Hicks, Stephen Sorensen, Ping Zhang, Richard F. Hamman, Ronald T. Ackermann, Michael M. Engelgau, and Robert E. Ratner. "The Cost-Effectiveness of Lifestyle Modification or Metformin in Preventing Type 2 Diabetes in Adults with Impaired Glucose Tolerance." *Annals of Internal Medicine* 142, no. 5 (March 1, 2005): 323–32. <https://doi.org/10.7326/0003-4819-142-5-200503010-00007>.

Use [UF VPN to access UF Libraries Resources](#) when off-campus.

The UF HSC library staff can assist you with questions or issues related to accessing online library materials. For assistance contact your College of Pharmacy librarian or visit the [HSC Library Website](#) at this URL: <http://www.library.health.ufl.edu/>

Suggested Textbooks/Readings

1. Attanasio et al. "Cost-minimization analysis of simvastatin vs. atorvastatin for maintenance therapy in patients with coronary or peripheral vascular disease." *Clinical therapeutics* 2001.
2. Luce et al. "Methods of Cost-effectiveness analysis: Areas of consensus and debate." *Clinical Therapeutics* 1995.
3. Law et al. "Cost-effectiveness analyses of the conversion of patients with non-insulin-dependent diabetes mellitus from glipizide to glyburide and of the accompanying pharmacy follow-up clinic." *Clinical Therapeutics* 1995.
4. Jackson et al. "An employer-based cost-benefit analysis of a novel pharmacotherapy agent for smoking cessation." *Journal of Occupational and Environmental Medicine* 2007

Other Required Learning Resources

None

Materials & Supplies Fees

None

Student Evaluation & Grading

Evaluation Methods and How Grades are calculated.

[The Canvas® gradebook will be set-up using the percentages below to compute the grade.]

Table 1.1 Evaluation and Grading

Assessment Item	Grade Percentage
Online Quiz [1]	5%
iRAT [2 @ 5% each]	10%
tRAT [2 @ 5% each]	10%
Problem-Solving Activity	15%
Final Exam	60%
Total	100%

Table 1.2 Grading Scale

Percentage	Letter Grade
92.50-100%	A
89.50-92.49%	A-
86.50-89.49%	B+
82.50-86.49%	B
79.50-82.49%	B-
76.50-79.49%	C+
72.50-76.49%	C
69.50-72.49%	C-
66.50-69.49%	D+
62.50-66.49%	D
59.50-62.49%	D-
< 59.50%	E

Rounding of grades:

Final grades in Canvas will be rounded to the 2nd decimal place. If the decimal is X.495 or higher, Canvas will round the grade to X.50. The above scale depicts this policy and grades are determined accordingly. Grade assignment is made using this policy and NO EXCEPTIONS will be made in situations where a student's grade is "close."

Problem-Solving Activity

During the 2nd Active Learning Session on Modules 5-7, students will be given a list of problems from a case study and participate in the problem-solving process in groups. The class will then be facilitated by a class-wide discussion to gain deeper knowledge.

Educational Technology Use

The following technology below will be used during the course and the student must have the appropriate technology and software.

1. ExamSoft™ Testing Platform
2. Canvas™ Learning Management System

For technical support, navigate to [Educational Technology and IT Support Contact Information](http://curriculum.pharmacy.ufl.edu/current-students/technical-help/) at this URL: <http://curriculum.pharmacy.ufl.edu/current-students/technical-help/>

Pharm.D. Course Policies

The Policies in the following link apply to this course. Review the General [Pharm.D. Course Policies](http://curriculum.pharmacy.ufl.edu/current-students/course-policies/) carefully, at this URL: <http://curriculum.pharmacy.ufl.edu/current-students/course-policies/>

Makeup Assignments

Makeup assignments may be required for excused absences from all Active Learning Sessions. Students will be required to complete the makeup assignment within one week of the missed session.

Late Assignments

No late assignments will be accepted.

Respect for Diversity

The University of Florida College of Pharmacy strives to stimulate a culture that promotes diversity and inclusion within an exceptional community of students, faculty, and staff. It is our intent that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength, and benefit.

We intend to present materials and activities that are respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions are encouraged and appreciated. Please let us know ways to improve the course's effectiveness for you personally or for other students or student groups.

If any of our class meetings conflict with any of your religious events, an excused absence will be provided when requested using the standard UF COP process as detailed in the [UF COP Course policies](#).

If you feel that you have experienced or witnessed any bias/treatment that falls short of these expectations, you may submit a report through the UF [COP Student Mistreatment Report](#).

Course Evaluation Process

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students

will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.ua.ufl.edu/public-results/>.

Appendix A. Course Directory

Teaching Partnership Leader/Course Director(s):

Hui Shao, M.D., Ph.D.

- Email: hui.shao@cop.ufl.edu
- Office: HPNP 3339
- Phone: 352-294-8323

Office Hours: Please see the Canvas course site for posted office hours

Haesuk Park, Ph.D.

- Email: hpark@cop.ufl.edu
- Office: HPNP 3325
- Phone: 352-273-6261

Office Hours: Please see the Canvas course site for posted office hours

Questions to Ask:

- Concerns about performance
- Guidance when there are performance problems (failing grades)
- General questions about content

Instructional Designer:

Skylar Johnson, M.A.

- Email: skylarjohnson@cop.ufl.edu
- Phone: 352-273-5709

Academic Coordinator Gainesville Campus:

Hanna Stallard

- Email: hstallard@ufl.edu
- Office: HPNP 4312
- Phone: 352 – 273 - 6312

[2PD Absent Request Ticket](#)

Educational Coordinators

Katie Orben

- Email: korben06@ufl.edu
- Office: Jacksonville Campus

Andrea M Arredondo

- Email: aarredondo1@cop.ufl.edu
- Office: Orlando Campus
- Phone: (407) 313 - 4087

Questions to Ask:

- Issues related to course policies (absences, make up exams, missed attendance)
- Absence/tardy requests (Only the Academic Coordinator handles absence requests)
- Questions about dates, deadlines, meeting place
- Availability of handouts and other course materials
- Assignment directions
- Questions about grade entries in gradebook (missing grades, incorrect grade)
- Assistance with ExamSoft® (Distance campus students may contact the Educational Coordinator for use of Exemplify and assistance during exams. The Academic Coordinator is the contact person for issues related to grading and posting of ExamSoft grades.)

Appendix B: Course Outline

Date / Time [Recommended for Independent Study]	Mod #	Activity	Activity Title	Contact Time (hr)	Objectives	Responsible
	1	Module	Module 1: Course Overview		1-3	Hui Shao
09/30/22	1	Lecture Video	Watch: Introduction to the Course	0.5	1-3	Hui Shao
09/30/22	1	Optional/ Supplemental	Read: Rascati Karen L. Essentials of Pharmacoeconomics, Second Edition, Lippincott Williams & Wilkins, 2014; Chapter 1		1-3	Hui Shao
09/30/22	1	Optional/ Supplemental	Watch: Pharmacoeconomics in Drug Formulary Decisions (30:04)		1-3	Hui Shao
	2	Module	Module 2: Measuring and Estimating Cost and Critiquing Research Article		3-5	Hui Shao
09/30/22	2.1	Lecture Video	Watch: Measuring Costs	1	3-5	Hui Shao
09/30/22	2.2	Lecture Video	Watch: Critiquing Research Article	0.25	3-5	Hui Shao
09/30/22	2	Optional/ Supplemental	Read: Rascati Karen L. Essentials of Pharmacoeconomics, Second Edition, Lippincott Williams & Wilkins, 2014; Chapters 2 and 3		3-5	Hui Shao
	3	Module	Module 3: Cost-Minimization Analysis and Cost-Effectiveness Analysis		3-5,11	Hui Shao
09/30/22	3.1	Lecture Video	Watch: Cost-Minimization Analysis	0.25	3-5,11	Hui Shao
09/30/22	3.2	Lecture Video	Watch: Cost-Effectiveness Analysis	1	3-5,11	Hui Shao
09/30/22	3	Reading	Read: Estimated Cost-Effectiveness, Cost Benefit, and Risk Reduction Associated with an Endocrinologist-Pharmacist Diabetes Intense Medical Management "T... - PubMed - NCBI https://www.ncbi.nlm.nih.gov/pubmed/?term=Estimated+cost-effectiveness%2C+cost+benefit%2C+and+risk+reduction+associated+with+an+endocrinologist-pharmacist+diabetes+intense+medical+management+%E2%80%9C+Tune-Up%E2%80%9D+clinic%E2%80%9D	0.5	3-5,11	Hui Shao

Date / Time [Recommended for Independent Study]	Mod #	Activity	Activity Title	Contact Time (hr)	Objectives	Responsible
09/30/22	3	Optional/ Supplemental	Read: Rascati Karen L. Essentials of Pharmacoeconomics, Second Edition, Lippincott Williams & Wilkins, 2014; Chapters 4 and 5		3-5,11	Hui Shao
09/30/22	3	Optional/ Supplemental	Read: Luce et al. "Methods of Cost-effectiveness analysis: Areas of consensus and debate." Clinical Therapeutics 1995. (UF Libraries) https://www.sciencedirect.com/science/article/pii/S0149291895800123		3-5,11	Hui Shao
09/30/22	3	Optional/ Supplemental	Read: Law et al. "Cost-effectiveness analyses of the conversion of patients with non-insulin-dependent diabetes mellitus from glipizide to glyburide and of the accompanying pharmacy follow-up clinic." Clinical Therapeutics 1995. (UF Libraries) https://www.sciencedirect.com/science/article/pii/S014929189580076X		3-5,11	Hui Shao
09/30/22	3	Optional/ Supplemental	Read: Attanasio et al. "Cost-minimization analysis of simvastatin vs. atorvastatin for maintenance therapy in patients with coronary or peripheral vascular disease." Clinical therapeutics 2001. (UF Libraries) https://www.sciencedirect.com/science/article/pii/S0149291801800102?casa_token=YWFU_HkTcqkAAAAA:8KXFI39grYYPt_y5KsY-qbGACKIF8kLXTODTLgnpwoE7Lzb6vUWh_Y4NV0VC36_pOhj0oDpsCA		3-5,11	Hui Shao
	4	Module	Module 4: Cost-Utility Analysis		3-6, 11	Hui Shao
10/03/22	4.1	Lecture Video	Watch: Lecture 4.1: Cost Utility Analysis Part 1	1	3-6, 11	Hui Shao
10/03/22	4.2	Lecture Video	Watch: Lecture 4.2: Cost Utility Analysis Part 2	0.5	3-6, 11	Hui Shao
10/03/22	4	Reading	Read: The Costs and Cost-effectiveness of Collaborative Care for Adolescents With Depression in Primary Care Settings: A Randomized Clinical Trial. - PubMed - NCBI https://www.ncbi.nlm.nih.gov/pubmed/27654449	0.5	3-6, 11	Hui Shao

Date / Time [Recommended for Independent Study]	Mod #	Activity	Activity Title	Contact Time (hr)	Objectives	Responsible
10/03/22	4	Optional/ Supplemental	Read: Athan et al. "Cost-effectiveness of routine and low-cost CD4 T-cell count compared with WHO clinical staging of HIV to guide initiation of antiretroviral therapy in resource-limited settings." AIDS 2010. (UF Libraries) https://journals.lww.com/aidsonline/Fulltext/2010/07310/Absolute_CD4_T_Cell_Counting_in_Resource_Poor.00010.aspx?casa_token=ZrXMaxEF1-kAAAAA:7IGGmZ_tLfwjGt0TY8SnNF2VfJmhMzTmUuN6V0zNFCMb5japea_ppKTQ4lIFbg_90z-l3WLYsqRG8WpLI07wOf0		3-6, 11	Hui Shao
10/03/22	4	Optional/ Supplemental	Read: Rascati Karen L. Essentials of Pharmacoeconomics, Second Edition, Lippincott Williams & Wilkins, 2014; Chapter 6		3-6, 11	Hui Shao
10/04/22 at 11:59pm	1-4	Quiz (Online)	No reading materials required		3-6, 11	Hui Shao
	5	Module	Module 5: Cost-Benefit Analysis		3-6, 11	Haesuk Park
10/04/22	5.1	Lecture Video	Watch: Lecture 5.1: Cost Benefit Analysis Part 1	1.5	3-6, 11	Haesuk Park
10/04/22	5	Reading	Read: Rascati Karen L. Essentials of Pharmacoeconomics, Second Edition, Lippincott Williams & Wilkins, 2014; Chapter 7	1.75	3-6, 11	Haesuk Park
10/04/22	5	Reading	"Comprehensive Health Management Pharmacist-Delivered Model: Impact on Healthcare Utilization and Costs" AJMC 2019;25;11.https://www.ajmc.com/view/complete-pharmacist-delivered-model-impact-on-healthcare-utilization-and-costs	0.75	3-6, 11	Haesuk Park
	6	Module	Module 6: Health-Related Quality of Life		3-7, 9-11	Haesuk Park
10/04/22	6	Lecture Video	Watch: Lecture 6.1: Health-Related Quality of Life	1.25	3-7, 9-11	Haesuk Park
10/04/22	6	Optional/ Supplemental	Read: Rascati Karen L. Essentials of Pharmacoeconomics, Second Edition, Lippincott Williams & Wilkins, 2014; Chapter 8		3-7, 9-11	Haesuk Park
	7	Module	Module 7: Decision Analysis		3-7, 9-11	Haesuk Park
10/04/22	7.1	Lecture Video	Watch: Lecture 7.1: Decision Analysis	1	3-7, 9-11	Haesuk Park

Date / Time [Recommended for Independent Study]	Mod #	Activity	Activity Title	Contact Time (hr)	Objectives	Responsible
10/04/22	7	Optional/ Supplemental	Read: Rascati Karen L. Essentials of Pharmacoeconomics, Second Edition, Lippincott Williams & Wilkins, 2014; Chapter 9		3-7, 9-11	Haesuk Park
10/04/22	7	Optional/ Supplemental	Read: Jackson et al. "An employer-based cost-benefit analysis of a novel pharmacotherapy agent for smoking cessation." Journal of Occupational and Environmental Medicine 2007		3-7, 9-11	Haesuk Park
10/05/22 @ 8:30am - 10:25am	1-7	Active Learning Session	Active Learning Session 1 (2 hours)	2	3-7, 9-11	Hui Shao
10/05/22	1-7	Quiz (iRAT/tRAT)	iRAT/tRAT 1		3-7, 9-11	Hui Shao
	1-7	In-class Activity	ALS 1: Covering Article "The Cost-Effectiveness of Lifestyle Modification or Metformin in Preventing Type 2 Diabetes in Adults with Impaired Glucose Tolerance" https://www.acpjournals.org/doi/full/10.7326/0003-4819-142-5-200503010-00007		3-7, 9-11	Hui Shao
10/06/22 @ 1:55pm - 3:50pm	1-7	Active Learning Session	Active Learning Session 2 (2 hours)	2	3-7, 9-11	Haesuk Park
10/06/22	1-7	Quiz (iRAT/tRAT)	iRAT/tRAT 2 - Covering Article 3: "Comprehensive Health Management Pharmacist-Delivered Model: Impact on Healthcare Utilization and Costs" AJMC 2019;25;11.https://www.ajmc.com/view/complete-health-management-pharmacistdelivered-model-impact-on-healthcare-utilization-and-costs		3-7, 9-11	Haesuk Park
09/06/22 (during class)	1-7	Assignment (Graded)	ALS 2: Application Activity		3-7, 9-11	Haesuk Park
10/10/22 @ 10am-12pm	1-7	Exam	Final Exam (2 hours)		1-11	Haesuk Park, Hui Shao
10/14/22 @ 4pm-4:30pm	1-7	Exam Review	Final Exam Review: Pharmacoeconomics			
			Total Hours	15.75		