

Online POP Course Syllabus

PHA6806: Pharmacoeconomic Modeling

3 credit hours

Note: The final syllabus posted in the course Canvas site is the most current and supersedes the syllabus posted on the internet.

Class Meeting Times

Sundays, 5:00-7:00 pm Eastern

Class Meeting Location

Class meetings are held in Zoom, which can be accessed via the course Canvas site. If you are having trouble accessing the course Canvas site, please contact Distance Education Support Services at Ahc-dess@ufl.edu.

Instructor

Kevin Lu, PhD, FISP, B.Pharm

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Phone/Text: 803-777-2653

Office Hours: By appointment

Office Location: via Zoom or phone

Course Description

This course will provide students with an understanding of the principles and practical methods to conduct pharmacoeconomic modeling. The “hands-on” nature of this course will allow students to develop and implement a model-based cost-effectiveness analysis of pharmaceutical products.

Course Objectives

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

1. Discuss pharmacoeconomics and outcomes research.
2. Describe the steps involved in designing a pharmacoeconomic model.
3. Create a pharmacoeconomic cost-effectiveness model using Microsoft Excel.
4. Extract effectiveness data from the literature to populate a pharmacoeconomic model.

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5. Extract cost data from the literature to populate a pharmacoeconomic model.
6. Conduct base-case and sensitivity analyses for pharmacoeconomic analysis.
7. Interpret and summarize the results of a pharmacoeconomic cost-effectiveness analysis.

Relationship to Program-level Student Learning Outcomes

This course pertains to the following program-level student learning outcomes:

Apply pharmacoeconomic theories and methods to assess the cost-effectiveness of pharmaceutical interventions and critically evaluate the implications of pharmacoeconomic studies

Required Textbooks and/or Software

Textbook: Drummond, M. F., Sculpher, M. J., Claxton, K., Stoddart, G. L., & Torrance, G. W. (2015). *Methods for the Economic Evaluation of Health Care Programmes*. (4th ed.) Oxford: Oxford University Press.

Software: Microsoft Excel

Recommended Materials

None

Course Pre-Requisites

PHA6283 Commercial Applications of Pharmacoeconomic Principles, and

PHA6935 Quantitative Methods of Evidence-based Pharmacy – a waiver of this pre-requisite may be granted according to alternative similar coursework, please contact the program to request.

Structure and Organization

This course is considered the culminating course in the applied pharmacoeconomics curriculum, applying and integrating previous foundational coursework. The course is delivered through UF's e-Learning system, Canvas, and in weekly synchronous class meetings using Zoom. Each week, students will be given an assignment that will be part of the pharmacoeconomic model development. At the end of the course students will have developed a cost-effectiveness model and a corresponding abstract and poster.

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Course Schedule

| Date | Topic | Assignments | Deadline |
|--------|--|---------------------------------|---------------|
| Week 1 | Cost-effectiveness Analysis | Pre-course quiz | End of Week 1 |
| Week 2 | Cost-effectiveness Analysis, decision tree, and Markov model | Assignment 1 | End of Week 2 |
| Week 3 | Cost-effectiveness Analysis – Model inputs | Assignment 2 | End of Week 3 |
| Week 4 | Cost-effectiveness Analysis –Cohort-based and Sensitivity Analysis | Assignment 3 | End of Week 4 |
| Week 5 | Real-world Data for Cost-Effectiveness Analysis | Assignment 4 | End of Week 5 |
| Week 6 | Budget Impact Analysis | Final Report (Abstract, Poster) | End of Week 6 |
| Week 7 | Cost-of-illness analysis | None | None |

Evaluation Methods

Developing expertise in pharmaco-economic modeling requires that you “get your hands dirty” by “doing it yourself”. During the course, individual assignments will be based on lecture materials, readings from journal articles and other assigned course materials. Assignments will include problem solving exercises using Microsoft Excel and article critiques. Overall, students’ performance will be based on class participation/engagement, assignments, and a final project.

Assignments (75%): 4 assignments will be given on key applications to support understanding of the concepts introduced to students. Students are expected to complete assignments individually as homework and be prepared to discuss and defend their work in class the following week. Please submit assignments on time to avoid grade deductions.

Final Research Project (25%): Students in this course are required to complete a project in the area of pharmaco-economic modeling. The final project has two components: an abstract and a poster of your project. Abstract and a deck of slides should be consistent with the International Society of Pharmacoeconomics and Outcomes Research (ISPOR) requirements.

Assessments

| | Content | Deadline | % of final grade |
|------------------------|---|---------------|------------------|
| Pre-course quiz | Quantitative Methods in Evidence-based Pharmacy, and Commercial Applications of Pharmacoeconomic Principles | End of Week 1 | 5% |
| Assignment 1 | Markov Model and Identification of Transition Probabilities and Utilities | End of Week 2 | 20% |
| Assignment 2 | Identify Different Types of Costs | End of Week 3 | 20% |
| Assignment 3 | Cost-Effectiveness Incremental Analysis and One-way Sensitivity Analysis | End of Week 4 | 15% |

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|---------------------|--|---------------|-----|
| Assignment 4 | Probabilistic Sensitivity Analysis (PSA) | End of Week 5 | 15% |
| Final Report | Abstract and Poster | End of Week 6 | 25% |

Timeline for instructor feedback:

Grades and feedback from the instructor will be posted within 7 calendar days.

Attendance Policy for this Course

Students are strongly encouraged to attend the synchronous class meetings although it is optional.

Attendance Policy for Online POP

Students are expected to formally [drop or withdraw](#) from the course if they no longer wish to participate. See the program's [Academic Calendar](#) for applicable deadlines. In some cases, the University may automatically drop students for inactivity and/or for failure to pay tuition. It is crucial for students to communicate with the DESS (Ahc-dess@ufl.edu) about their status in the course, and about any tuition deferments or other special conditions related to their tuition payment. Any student who remains enrolled in the course after the drop/add deadline is considered tuition-liable, unless exempted by University petition. The official UF Attendance Policy can be found [here](#).

Make-up Policy:

Late assignments will not be accepted. Assignments turned in past the deadline will be given a zero (0). If you want to request an extension, contact the instructor at least 48 hours prior to the due date. Requests will be handled on a case-by-case basis.

Grading Policy

The only passing grades for graduate students are A, A-, B+, B, B-, C+, C, and S. Grades of B-, C+ or C count toward a graduate degree if an equal number of credits in courses numbered 5000 or higher have been earned with grades of B+, A- and A, respectively. Grade points are not given for S and U grades; S and U grades are not used to calculate grade point averages. All letter-graded courses eligible to count toward the graduate degree, except 1000- and 2000-level courses, are used to calculate the cumulative grade-point average. Letter grades of C-, D+, D, D- or E are not considered passing at the graduate level, although the grade points associated with these letter grades are included in grade point average calculations. See the [UF graduate academic regulations](#) for more information.

| | |
|---|----------|
| A | >92.500% |
|---|----------|

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A- 89.500–92.499%

B+ 86.500–89.499%

B 82.500–86.499%

B- 79.500–82.499%

C+ 76.500–79.499%

C 72.500–76.499%

C- 69.500–72.499%

D+ 66.500–69.499%

D 62.500–66.499%

D- 59.500–62.499%

E <59.499%

Course Technology Support

Your instructor is not able to handle technological issues or answer questions related to computer issues.

- **Assistance accessing course Canvas page:** Contact Distance Education Support Services at Ahdess@ufl.edu
- **IT Support:** Contact UF Computing Help Desk at 352-392-HELP (4357) or helpdesk@ufl.edu or submit an [online request form](#). If a technical problem causes you to miss an assignment, you must report the problem to the Help Desk and then email your instructor your Help Desk ticket number to the instructor in order to receive an extension.

Students Requiring Academic Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the [Disability Resource Center](#). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course technologies meet online learning accessibility standards for sight and hearing-impaired learners. Likewise, course materials are developed in accordance with accessibility standards. Course documents and

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webpages are formatted for screen-reader accessibility with the use of headings, styles, or alternative text tagging for images. Accessibility design tools in Microsoft Office products and in Canvas are used to evaluate and update accessibility issues detected in the instructional materials. Synchronous class sessions in Zoom are recorded. These recordings are posted to the course site to accommodate students unable to attend.

- [Canvas Accessibility](#)
- [Zoom Accessibility](#)

Course Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. [Click here for guidance on how to give feedback in a professional and respectful manner](#). 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 ufl.bluera.com/ufl/.

University Honesty Policy and Academic Integrity

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” [The Honor Code](#) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Regarding academic integrity, students in the program are strongly encouraged to be mindful of what constitutes plagiarism. Written assignments that contain the research or other original published work of someone else must be properly quoted, cited, paraphrased, or referenced appropriately. A software (TurnItIn) that is integrated with Canvas Assignments may be utilized to help students determine if a written submission meets the criteria for a properly referenced research paper. Please ask for help, utilize resource materials and take advantage of opportunities like creating a draft of your paper to test, ensuring you have addressed any errors prior to the final submission.

Please watch these short videos about this topic:

- [Understanding and Avoiding Plagiarism: Types of Plagiarism](#)
- [Avoiding Plagiarism](#)

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Software Use and Course Technology

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

The University policy on use of ChatGPT is available [here](#).

Educational technology in the program is primarily the Canvas Learning Management System (LMS) and Zoom web conferencing software. These tools firmly support learning objectives and course goals. Writing with communication tools, reading articles from digital collections, and viewing video presentations in high-quality, accessible formats are essential to facilitate meaningful learning experiences. These experiences expand knowledge and influence professional work habits and skills such as information-gathering techniques and evidence-based practice. Synchronous class sessions in Zoom provide learners with opportunities to gain confidence and practice how they interact and collaborate in online meetings.

- [Canvas Student Guide](#)
- [Zoom Resources](#)

A minimum number of other technical skills are required for success in the online courses. These include accessing course webpages to read text and listen to recorded videos, using word processing tools (MS Word, PowerPoint), downloading/uploading content, submitting online assignments and using a variety of communication tools (Canvas Inbox, Discussions, Zoom Conferences).

Course Communication

Canvas (Inbox tool) will be used as the primary communication tool between the instructor and students. Check daily for new announcements or notifications about course updates. UF email will also be used occasionally for mass communication to the class, so please check your email at least once a day as well. All emails sent out to the entire class will also be posted as an Announcement on Canvas. The instructor will generally respond to student messages within 48 hours.

General questions about course content (e.g., assignments or lectures) or policies should be posted to the course discussion board. We expect students to help each other track down answers as best as possible. Read through all the other posts in the discussion board first before posting to make sure your question has not been addressed/answered already. Please include a clear subject title for your topics to make it clear what your post pertains to. The instructor will generally respond to questions posted on the course discussion board within 48 hours.

Emotions can easily be misinterpreted on a discussion board/emails, so make sure your message is clear before sending it since there are no physical gestures or voice inflections that accompany posts/emails. Any

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posts/emails deemed inappropriate by the faculty will be dealt with on a case-by-case basis with either the faculty directly or they will be sent on to the Associate Dean for Professional Affairs.

For personal issues/questions, please email your instructor. Be sure to include in your subject line the course listing and then a quick subject (e.g., PHAXXXX – Your Name -). This will allow instructors to quickly identify emails related to the course amongst the many emails that are received each day. Emails not correctly addressed may get lost in the shuffle and unintentionally deleted or ignored so be sure to follow the guidelines exactly.

Student Privacy

There are federal laws protecting your privacy in terms of grades earned in courses and on individual assignments. For more information, please see the [Notification to Students of FERPA Rights](#).

Recordings of weekly class sessions in Zoom are created for the purpose of course teaching and learning, as well as for use as a resource for students who miss a class session.

The use of video (or web camera) feature in Zoom is not a requirement, but rather is voluntary for meeting participants. For both the audio and video features in Zoom, you will have the option to Start or Stop these functions.

Students who participate with their camera engaged or who utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

- [Zoom Software Privacy Statement](#)
- [Canvas \(by Instructure\) Privacy Policies](#)

Security

Online activity in Canvas requires an active UF GatorLink account to log in, as well as enrollment in courses. The Zoom Conference meetings for weekly classes are accessed within Canvas. These meetings have a pass code applied as an additional security setting. Students in the class do not need to enter the passcode, however anyone not enrolled in the course cannot join the meeting without it.

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Library Resources

For remote access to UF library resources such as e-journals or other digital collections, use the [UF VPN or proxy server to connect](#).

Additional University Resources

- **U Matter, We Care:** If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.
- [Counseling and Wellness Center](#)
- **Sexual Assault Recovery Services (SARS):** Student Health Care Center, 392-1161.
- **University Police Department** at 392-1111 (or 9-1-1 for emergencies), or police.ufl.edu
- [E-learning technical support](#): 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
- [Teaching Center](#): Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
- [Writing Studio](#): 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
- [Student Complaints](#)