PHA 5226  [Evidence-based Pharmacy]
4 Semester Credit Hours

Course Purpose:

This course includes methods for evaluation and improvement of drug therapy outcomes including critical appraisal of drug literature, clinical service literature, and quality assessment and improvement techniques with special focus on patient and medication safety.

The Institute of Medicine published a series of reports addressing the improvement of health care quality. Its recommendations for reinventing the health care system have two major themes: the application of evidence to health care delivery; and full adoption of quality improvement through comprehensive use of information technology and systems that reward rather than impede quality.

This course trains pharmacy students to balance individual patient care with population-based assessment of pharmacotherapy outcomes. Evidence-based medicine requires clinicians to monitor, evaluate and implement evidence from the rapidly evolving medical literature. Students will learn how efficacy, effectiveness, safety, and efficiency data is summarized into evidence reports and clinical guidelines and learn about the limitations of this process. They will appraise original research to support clinical decision-making and to evaluate whether current practice complies with the best evidence.

Quality assessment and improvement exercises will be introduced to identify and review variation in pharmacotherapy processes and outcomes. Students will use published evidence as well as primary data to identify targets for quality improvement, to formulate strategies for identifying high-risk patients and to improve patient care, and to define process and outcome measures to evaluate patient outcomes.

Note: This course is approved by the Board of Pharmacy to fulfill the requirements for 2 hours of continuing education (CE) credit on Medication Safety for licensure. The Office for Student Affairs will issue a letter for every student who achieves a grade of at least 70% for Case #7 (Medication Safety) that will be done during Week 11. This medication-safety grade will be calculated by giving 50% of the grade for participation in the case, 40% based on the online quiz for this week, and 10% based on the essay (ie, question of the day) quiz that will be administered at the beginning of class. You will also have to receive a C or better in this class to receive the medication safety CE credit.

Course Faculty and Office Hours
Course Coordinator:
Coordinator: Randy Hatton, BPharm, PharmD, FCCP, BCPS

Email: rhatton@cop.ufl.edu  Office: HPNP2331
Cell Phone: 352.262.0736  Home Office: 352.472.0102

Office Hours by appointment: please email for an appointment.
Place and Time of Class Sessions

<table>
<thead>
<tr>
<th>Campus</th>
<th>Section</th>
<th>Room</th>
<th>Date and time</th>
</tr>
</thead>
<tbody>
<tr>
<td>GNV</td>
<td>5687</td>
<td>G201</td>
<td>Tues 10:40-12:35</td>
</tr>
<tr>
<td>GNV</td>
<td>5696</td>
<td>G301</td>
<td>Tues 10:40-12:35</td>
</tr>
<tr>
<td>GNV</td>
<td>7764</td>
<td>1101</td>
<td>Tues 10:40-12:35</td>
</tr>
<tr>
<td>JAX</td>
<td>7765</td>
<td>Charter</td>
<td>Wed 2:00-4:00</td>
</tr>
<tr>
<td>ORL</td>
<td>7768</td>
<td>Room 234</td>
<td>Tues 9:00-11:00, 10:00-12:00, or 11:00-1:00</td>
</tr>
<tr>
<td>STP</td>
<td>7770</td>
<td>115B/117AB</td>
<td>Tues: 1:30-3:20</td>
</tr>
</tbody>
</table>

Classes will meet nine times over the course of the semester. Please refer to the Calendar posted on Sakai and the table below for specifics. There will be a “Question of the Day” during each class meeting. All students are required to have an iDevice, which will be used in class for polling.

<table>
<thead>
<tr>
<th>Week</th>
<th>Class Dates(^a)</th>
<th>Quiz (^b)</th>
<th>Case (^c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No class</td>
<td>No quiz</td>
<td>(The Literature) No case or Question of the Day</td>
</tr>
<tr>
<td>2</td>
<td>9/2 or 9/3</td>
<td>1(^c)</td>
<td>(Case Reports/Uncontrolled Trials)</td>
</tr>
<tr>
<td>3</td>
<td>No class</td>
<td>2</td>
<td>(Randomized Controlled Trials)</td>
</tr>
<tr>
<td>4</td>
<td>9/16 or 9/17</td>
<td>3</td>
<td>(Randomized Controlled Trials II)</td>
</tr>
<tr>
<td>5</td>
<td>9/23 or 9/24</td>
<td>4</td>
<td>(Noninferiority Trials)</td>
</tr>
<tr>
<td>6</td>
<td>9/30 or 10/1</td>
<td>5</td>
<td>(Case-Control/Observational Studies)</td>
</tr>
<tr>
<td>7</td>
<td>No class</td>
<td>6</td>
<td>No case or Question of the Day</td>
</tr>
<tr>
<td>8</td>
<td>10/14 or 10/15</td>
<td>7</td>
<td>(Cohort/Observational Studies)</td>
</tr>
<tr>
<td>9</td>
<td>10/21 or 10/22</td>
<td>8</td>
<td>(Meta-Analyses)</td>
</tr>
<tr>
<td>10</td>
<td>10/30</td>
<td>No quiz</td>
<td>MIDTERM</td>
</tr>
<tr>
<td>11</td>
<td>11/4 or 11/5</td>
<td>No quiz(^d)</td>
<td>(Medication Safety)</td>
</tr>
<tr>
<td>12</td>
<td>No class</td>
<td>9(^d)</td>
<td>Veteran’s Day (No case or Question of the Day)</td>
</tr>
<tr>
<td>13</td>
<td>11/18 or 11/19</td>
<td>10</td>
<td>(Quality Improvement/Quasi-Experimental)</td>
</tr>
<tr>
<td>14</td>
<td>No class</td>
<td>11</td>
<td>Thanksgiving (No case or Question of the Day)</td>
</tr>
<tr>
<td>15</td>
<td>12/2 or 12/3</td>
<td>12</td>
<td>(Quality Improvement/RCT)</td>
</tr>
<tr>
<td>16</td>
<td>No class</td>
<td>No quiz</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>12/18 or 12/19</td>
<td>No quiz</td>
<td>FINAL PRESENTATIONS</td>
</tr>
</tbody>
</table>

\(^a\) Class on Tuesdays in GNV and STP and on Wednesdays in JAX and ORL.

\(^b\) No quiz because classes start on Monday, 8/25/14

\(^c\) Quiz 1 covers materials for the first 2 weeks of lectures and readings; and Case #1.

\(^d\) The Medication Safety quiz is delayed because the Midterm is on Thursday the week before. This gives students more time to review the medication safety materials for the quiz.

The midterm will take place on Thursday, October 30th from 2:30-6:30 PM. Classroom assignments for the midterm will be given sometime before then. In Gainesville, the exam will be in the Communicore (G1-15 and G1-17).

Your final project presentation will take place sometime between 8:00AM and 6:00PM on either December 18th or December 19th. For planning purposes, assume that you will not be finished with the class until 6:00PM on Dec. 19th.
How This Course Relates to the Learning Outcomes You Will Achieve in the PharmD Program:

This course prepares PharmD students to accomplish the following abilities and related Student Learning Outcomes (SLOs) upon graduation:

1. Provide Patient-centered Care - Specifically: Design, implement, monitor, evaluate, and adjust pharmacy care plans that are patient-specific; address health literacy, cultural diversity, and behavioral psychosocial issues; are evidence-based and accomplished in collaboration with other health professionals. (SLO 1.1)
2. Provide Population Health by promoting effective drug use and disease prevention/wellness. (SLO 2.1)
3. Perform pharmacist responsibilities within the medication use system and relate to the larger health care systems to assure safe and quality patient care. (SLO 3.3)
4. Solve complex practice problems (both patient-specific and general practice) using an evidence-based approach, other aspects of good clinical science, and informatics. (SLO 8.3)

Course Objectives

The overall goal of the course is to familiarize students with methods and tools to evaluate as well as select patient-centered pharmacy services, drugs, and other medical technologies. It has two components, the critical appraisal of pharmaceutical and medical literature and the quality assessment and improvement of drug therapy and pharmaceutical care services.

Upon completion of the course students will be able to:

- Find and evaluate published medical literature for use in clinical decision-making and understand scientific reasoning and the research process in this context;
- Describe how clinical findings are summarized in evidence reports and apply them appropriately in clinical decision-making;
- Describe current evidence related to the assessment and improvement of patient safety, and the epidemiology of medication errors and adverse drug events
- Devise ways to assess the quality of pharmacotherapy for the patients seen in practice, compare differences in clinical practices and quality and their effect on patient outcomes.
- Identify opportunities for changes in practice that are feasible and effective for improving patient outcomes.
- Describe how to design, implement, and evaluate quality improvement programs.

Attitudinal objectives include the development of an appreciation for the pharmacist’s professional responsibilities and role in pharmaceutical care services, quality improvement and their impact on patient outcomes.
Pre-Requisite Knowledge and Skills

Successful completion of the 1PD and 2PD coursework in the PharmD program is required to take this course.

Course Structure & Outline

The course is split into two components following the philosophy of evidence-based medicine: critical literature appraisal and quality assessment and improvement. New content will be presented in lectures, online tutorials, and assigned readings. Content will be applied in problem-solving exercises online and in small group sessions that will meet for a 2-hour time periods nine times during the course of the semester. Exercises and exams will include assessments of published evidence and proposals for quality improvement programs and be presented in oral presentations and written reports.

1. Critical literature appraisal will address the following issues
   a) Introduction to evidence-based pharmacy
   b) Retrieval methods for primary medical literature, drug references, and other evidence sources
   c) Methods for critical literature appraisal
   d) Study types and their relevance to study validity and application in practice
   e) Interpretation of epidemiologic measures of frequency and risk
   f) Threats to internal validity (confounding, bias, random error), hypothesis testing and scientific reasoning
   g) Generalizability and the scientific method
   h) Methods and resources for evidence summaries (meta-analysis, evidence reports, clinical guidelines)

2. Quality assessment and improvement
   a) Definitions and elements of quality and examples of quality deficits in healthcare
   b) Means to measure quality and current applications; selection of high-priority areas for QI
   c) Aggregation of individual patient data for quality assessment: measure of process and outcomes quality
   d) Methods to explore and explain variation in quality, benchmarking
   e) Selection of QI strategies and plans for implementation (including screening/recruitment of high-risk patients, process measures for monitoring, design of an evaluation plan)

3. Additional content related to patient safety and drug safety
   a) Review of drug safety information, methodological issues related to pharmacovigilance and post-marketing studies
   b) Epidemiology of patient safety and medication errors, ascertainment and analysis of medication error data
   c) Examples of medication safety initiatives
Textbook

The course does not use a formal textbook, but recommendations for readings will be posted. Many of the required readings come from an eBook available via the Health Science Center Library:


Active Learning Requirements

- Class participation in small discussion groups, led by a facilitator.
- Completing cases, which consist of evaluating a relevant article (can be done in a group with other students) and discussing them in the small group sessions.
- Completion of online quizzes.
- Completion of a short essay quiz (Question of the Day) before each case discussion
- Developing a QI program proposal written as a student group (final exam).
- Completing an individual critical literature appraisal (midterm exam).

Student Evaluation & Grading

This class embraces the teaching and evaluation methods described in the College of Pharmacy’s educational philosophy. The COP’s Educational Philosophy uses multi-faceted, active-learning teaching strategies.

The course consists of weekly lectures and cases that are completed and discussed in weekly small group sessions (2 hours on a day specific to your campus). Lectures are not live. Weekly cases focus either on the retrieval or critical appraisal of selected published evidence or quality assessment and improvement exercises. Cases will be completed by students in self-study. Successful completion of the cases is evaluated through online quizzes and the “questions of the day.” Students are allowed to discuss the cases, but they are responsible for presenting their own original work during the quiz and small group sessions.

Exams include a midterm at the end of the first 9-week period assessing the ability to critique a study and demonstrate an understanding of course materials and a quality improvement project at the end of the term.

Cases will be posted online weekly and will be used for class participation grades, online quizzes, and the questions of the day. When there is no case that week, the quiz will cover other assignments, the lectures, and required readings.

Class participation. Students are expected to be prepared for and to participate during classes. Students will begin the semester with 10 points, and points will be deducted when students are not prepared for class.
**Online quizzes.** Assignments and cases will be evaluated using online quizzes that will be open from Mondays at 4:00 PM to Tuesdays at 9:00 AM (you will only have 15 minutes to complete the quiz, however). When there is a holiday on Monday (e.g., Labor Day), quizzes will be open Sunday at 6:30 PM to Tuesday at 9:00 AM. When there is another major exam on Monday, quizzes will be open Monday at 11:00 AM to Tuesday at 9:00 AM.

**Question of the day:** For the first five minutes of each small group session, students will answer a straightforward, short-answer, essay question based on the lectures, readings, and case from that week. Students will receive either full (0.5 points) or no credit. Please have a pen ready for the beginning of each small group session. Paper will be provided.

**Written critical literature appraisal (midterm exam).** Students will be asked to evaluate an article, which could include any type of study design, and analysis that was covered in class. The exam will be completed in house and students are allowed to bring textbooks and other reference material (open book/notes), but there will be no access to phones, Internet, or any communications device. The midterm will be a written, “Blue-Book” type written exam using a short answer format will be used. If we can work out technical issues, we will use ExamSoft®.

**QI program proposal (final project).** Student groups of 4-5 students will develop a quality improvement program and present their work during a formal presentation session (about 12-15 minutes).

**Grading Scale**

<table>
<thead>
<tr>
<th>% of grade</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>35.5%</td>
<td>Written clinical literature appraisal (Midterm)</td>
</tr>
<tr>
<td>30%</td>
<td>Final quality improvement project (Final project, group work of max. 5 students)</td>
</tr>
<tr>
<td>10%</td>
<td>Class participation</td>
</tr>
<tr>
<td>20%</td>
<td>Online quizzes (10 of 12; lowest two will be dropped)</td>
</tr>
<tr>
<td>4.5%</td>
<td>Questions of the day</td>
</tr>
</tbody>
</table>

**Grading system:**

Scores from each of the assignments and exams will be combined to calculate a total score. Final grades will be assigned according to the following scheme:

- A 93.0 - 100
- A- 90.0 – 92.9
A grade of C or above is considered a passing grade.

**Class Attendance Policy**

Unexcused absences from the group discussions carry a 5-point (1/2 letter grade) penalty taken off the final grade. *Absences due to illness and other emergencies must be conveyed by e-mail to your facilitator AND Dr. Hatton (hatton@cop.ufl.edu) before the group discussion begins.* Email is preferred but a telephone call will be accepted if you cannot email. *Messages from friends will not be accepted.*

**Quiz/Exam Policy**

Students can request re-evaluation of completed written assignments (e.g., the midterm exam) within 1 week after the grade was received. In requesting a re-evaluation, students agree to accept any adjustment to their grade (negative or positive) that may be proposed by the re-grading.

**Make-up Quiz/Exam Policy**

Make-up exams for the midterm and final project presentation will be handled by the course coordinator on a case-by-case basis.

**Policy on Old Quizzes and Assignments**

Samples of previous years’ midterms will be provided to students in an appropriate time period before the midterm.

**Assignment Deadlines**

Assignments (online quizzes and the QI project) will be posted with explicit due dates. Students are responsible for complying with these deadlines. Late assignments will not be graded (0 points). Delays due to unforeseen and/or distressing events will be treated on a case-by-case basis by the course coordinator.
For online quizzes, please prepare for the event that you may be disconnected from the Sakai System for some reason by copying the quiz questions into a word document. Emails with the answers that are received within the time limit for quiz completion will be accepted as equivalent to online completion of the quiz; send to rhatton@cop.ufl.edu.

**General College of Pharmacy Course Policies**

The College of Pharmacy has a website that lists course policies that are common to all courses. This website covers the following:

1. University Grading Policies
2. Academic Integrity Policy
3. How to request learning accommodations
4. Faculty and course evaluations
5. Student expectations in class
6. Discussion board policy
7. Email communications
8. Religious holidays
9. Counseling & student health
10. How to access services for student success

Please see the following URL for this information:


**Complaints**

Should you have any complaints with your experience in this course, please contact your course coordinator as soon as possible. Do NOT put these concerns off. It is unreasonable to wait until a situation cannot be resolved to file a complaint. If your complaint is unresolved, contact the COP’s Senior Associate Dean-Professional Affairs. For unresolved issues, see:

Other Course Information

iDevices:

iDevices will be used in class to actively engage students through general polling during discussions to better understand how well you are understanding the material. Registration of iDevices is not necessary. Please verify your license is still valid; you can do this by running ResponseWare on your iDevice. The expiration date is displayed under your deviceID. Prior to class, you will need to logon to the HSC wireless network with your password. To participate in class, your instructor will provide you a SessionID to answer the questions on your iDevice. Please consult the “Connecting to a Turning Point Session” tutorial located in the course website for additional details. You are responsible for bringing your iDevice to class and maintaining it in operating order. If you have questions about your iDevice, contact the College of Pharmacy IT Department (it.pharmacy.ufl.edu).

Sakai:

If you have technical problems with Sakai, please contact the UF IT Help Desk (352.392.4357) or the College of Pharmacy IT Department (352.273.6281). If you have a Sakai content problem or cannot resolve a problem with the previous contacts, please contact the Course Coordinator.
Appendix A: Directions for Contacting Faculty & Course Faculty List

Directions for Contacting Course Faculty

Sakai will be used for most communications between the faculty and students. Check for new announcements at least once a day for any course updates. Email will also be used once in a while 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 Sakai.

General questions about course content (e.g., assignments or lectures) or policies should be posted to the 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 clear subjects for your post topics to make it clear to all what your post pertains to.

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 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 facilitator directly and copy Dr. Hatton (rhatton@cop.ufl.edu). Be sure to include in your subject line the course listing and then a quick subject (i.e. PHA5226 – Your Name - Cat got sick this morning). This will allow coordinators to easily identify emails related to the course amongst the plethora of junk and other emails that are received each day. Emails not properly addressed may get lost in the shuffle and unintentionally deleted or ignored so be sure to follow the guidelines exactly. If you have any issues with the course site please email Dr. Hatton.

Course Coordinator

*Randy C. Hatton, PharmD*  rhatton@cop.ufl.edu

Facilitators and TA’s

Chao Chen, BS, GNV TA charl.coverc@ufl.edu
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