Wilkes University Curriculum Committee

PROPOSAL SUBMITTAL FORM

Directions:

- Use this set of forms for all proposals sent to the Curriculum Committee.
- Pages 1-3 of this document are required. Any unnecessary forms should be deleted from the packet before submissions. If multiple forms are needed (course addition, course deletion, etc), simply copy and paste additional forms into this packet.
- Note that all new programs (majors and minors), program eliminations, significant program revisions and all general education core revisions must be reviewed and approved by the Provost and Academic Planning Committee (APC) prior to submission to the Curriculum Committee. The Provost will make the decision if a program revision requires APC review.
- Completed (and signed) forms are due on the first Tuesday of every month. Submit one signed copy to the Chair of the Curriculum Committee.

1. Originator: Dan F. McCune
   Pharmaceutical Sciences
   (570) 408-4296 / dan.mccune@wilkes.edu

2. Proposal Title: Pharmacogenomics

3. Check only one type of proposal: (double click on the appropriate check box and change default value to “checked”).

☐ New Program. (Major or Minor Degree Programs). This requires prior review and approval by the Provost and APC.
☐ Elimination of Program. (Major or Minor Degree Programs). This requires prior review and approval by the Provost and APC.
☐ Program Revision. Significant revisions to a program require review and approval by the Provost. The Provost determines if review and approval by APC is necessary.
☐ General Education Revision. Submissions only accepted from the General Education Committee (GEC). Must be reviewed and approved by the Provost.
☐ Creation of new departments, elimination of existing department. This requires prior review and approval by the Provost and APC.
☒ Course additions or deletions not affecting programs (such as elective courses, transition of “topics” courses to permanent courses).
☐ Change in course credit or classroom hours.
☐ Incidental Changes. Includes changes in course/program title, course descriptions, and course prerequisites. (Although these changes do require approval by the Curriculum Committee, they do not go before the full faculty for approval).
☐ Other (Specify)
4. Indicate the number of course modification forms that apply to this proposal:

- X Course Addition Form (plus syllabi)
- ______ Course Deletion Form
- ______ Course Change Form

5. Executive Summary of Proposal.

Briefly summarize this proposal. The breadth and depth of this executive summary should reflect the complexity and significance of the proposal. Include an overview of the proposal, background and reasoning behind the proposal and a description of how the proposal relates to the mission and strategic long-range plan of the unit and/or university. For incidental changes a one or two sentence explanation is adequate.

Pharmacogenomics is the study of genetic factors that influence how a drug works. Small differences in the genes between populations or even individuals can mean that they react differently to medicines. Knowledge about pharmacogenomics coupled with information about a patient’s specific genotype allows clinicians to personalize and optimize drug therapy. It ensures that the correct drug is given at the correct dose for each patient while minimizing adverse effects and reducing the time it takes to implement effective treatment.

Increasingly, knowledge of pharmacogenomics in our graduates is an expectation of the American Association of Colleges of Pharmacy (AACP) and the Accreditation Council for Pharmacy Education (ACPE). Consistent with this, the ability to demonstrate knowledge of pharmacogenomics pertinent to the individualization of drug therapy is one of the stated outcomes of our Pharmacy program.

Recently, the Wilkes School of Pharmacy has begun to implement concentrations in particular areas (e.g. Spanish language, leadership) in order to distinguish our graduates from those of other programs and improve their marketability post-graduation. This elective course is intended to provide interested students with in-depth knowledge of clinical pharmacology, principles of therapeutics, molecular pharmacology, and genetic and genomic approaches to the personalization of drug therapy. Furthermore, implementation of this course will allow us to assess the feasibility of establishing a concentration in pharmacogenomics, a minor, or a Master’s program in pharmacogenomics at Wilkes.

6. Other specific information. (Not applicable for incidental changes.)

What other programs, if any, will be affected by this proposal? Describe what resources are available for this proposal. Are they adequate? What would be the effect on the curriculum of all potentially affected programs if this proposal were adopted? Include any potential effects to the curriculum of current programs, departments and courses.

The new course proposed would be available to students in the School of Pharmacy (P2 or P3) as well as interested upper level science majors. This does not affect the core curriculum or interfere with other non-elective offerings. The current library structure, offerings, and on campus internet
access is sufficient to support this course. There are courses offered by other departments that students would need to take as prerequisites; BIO 121 (Principles of Modern Biology I), CHM115 (Elements and Compounds), BIO122 (Principles of Modern Biology II), CHM116 (The Chemical Reaction), CHM231 (Organic Chemistry I), CHM232 (Organic Chemistry II).

7. Program Outline. (Not applicable for incidental changes).
A semester-by-semester program outline as it would appear in the bulletin for a new program or any modified program with all changes clearly indicated.

8. Signatures and Recommendations. (please date)
- Signatures of involved Department chair(s) and Dean(s) indicate agreement with the proposal and that adequate resources (library, faculty, technology) are available to support proposal.
- If a potential signatory disagrees with a proposal he/she should write “I disagree with this proposal” and a signed statement should be attached to this submission.

Edward Foote
Date 2/4/15
Print Name/Title
Department chair(s) of all potentially affected programs

Ignacio W. Witzak
Date 2/4/2015
Print Name/Title
Department chair(s) of all potentially affected programs

Ben W. Zelk
Date 2/11/2015
Print Name/Title
Dean(s) of any potentially affected College/School.

Joseph M. Kultys
Date 02/18/15
Print Name
Registrar
<table>
<thead>
<tr>
<th>Print Name</th>
<th>Signature</th>
<th>Date</th>
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<tbody>
<tr>
<td>Provost (For new programs, significant revisions and revisions to the General Education Program revisions only).</td>
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Provost should check here ____ if this proposal is a program revision AND the significance of the revision requires review and approval by APC prior to Curriculum Committee.

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<thead>
<tr>
<th>Print Name</th>
<th>Signature</th>
<th>Date</th>
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<tbody>
<tr>
<td>Chair, Academic Planning Committee. For new programs, program revisions sent via the provost. Signature indicates that the proposal has been reviewed and approved by APC.</td>
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<tr>
<th>Print Name</th>
<th>Signature</th>
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<tbody>
<tr>
<td>Chair, General Education Committee. For revisions to General Education program only. (Signature indicates that the proposal has been approved by GEC).</td>
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Wilkes University Curriculum Committee
COURSE ADDITION FORM – page 1

1. Course Title:         Pharmacogenomics

2. Course Number:        PHA/PHS 435
                         Coordinate with Registrar to insure course number is available

3. Course Credit Hours:
                         Classroom Hours:  2  Lab Hours______  Other______


5. Course Description (as proposed for the Bulletin):  Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.

   The student will learn to understand how human genetics and genomics can be used to provide optimized drug therapy and patient care. Learning about this emerging field will enable the student to better understand and manage new genomics-based diagnostic tools and make best treatment choices. The student will spend time discussing societal and ethical implications of genetic testing and the resultant individualization of drug therapy, explain basic principles of human genetics and heredity and more.

6. Required Documentation:
   Proposed Syllabus    Attach proposed syllabus immediately after this document. In some situations the official syllabus may contain information which is beyond the review needs of the Curriculum Committee (such as extensive rubrics, etc). It is permissible to attach an abbreviated syllabus. In general, syllabi (whether full or abbreviated) should contain the following information: Course Title, Course Number, Credit hours, Faculty Information (name contact information, office hours), Course Description, Course Outcomes or Objectives, Assessment (grading) informations, required texts (or other things such as tools, software, etc), pertinent policies and a proposed schedule of topics.
Wilkes University  
Nesbitt School of Pharmacy  
Department of Pharmaceutical Sciences  

PHA/PHS 435  
PHARMACOGENOMICS  

Instructors  
Dan F. McCune Ph.D.  
Adam VanWert, Ph.D.  
Ajay Bommareddy, Ph.D.  

Class Information  
Thurs 9:00am – 10:59am  
SLC ______
Course Credits: 2

Class time / room
Thursday, 9:00am-10:59am / Room TBD.

Course Description
In the near future, personalized medicine will revolutionize the field of pharmacy by offering effective drug therapies that are guided by the genetic variants of individual patients. In our pharmacogenomics course, you will learn to understand how human genetics and genomics can be used to provide optimized drug therapy and patient care. Learning about this emerging field will enable you to better understand and manage new genomics-based diagnostic tools and make best treatment choices. You will spend time discussing societal and ethical implications of genetic testing and the resultant individualization of drug therapy, explain basic principles of human genetics and heredity and more. While pharmacogenomics has a modest impact on daily practice at this time, principles covered in this course will likely soon become a regular part of clinical care.

Prerequisites

Learning Objectives
Upon completion of this course, participants will be able to:

-Explain the basic principles of human genetics and heredity as they apply to inter-individual variation in treatment response
-Apply the principles of molecular and cellular biology to explain the genetic basis of variability in drug response.
-Discuss how genetic variability in genes encoding drug metabolizing enzymes, drug transporting proteins, and drug receptors (targets) can contribute to variability in drug disposition and action, leading to changes in pharmacokinetics, pharmacodynamics, and clinical outcome
-Discuss impact of pharmacogenomics in different therapeutic areas. Discuss case studies reporting the clinical consequences of pharmacogenomics on therapeutic efficacy or toxicity.
-Apply pharmacogenomic concepts to a particular drug therapy to solve relevant problems in pharmaceutical care
-Recognize the societal and ethical implications of genetic testing and the resultant individualization of drug therapy
-Critically evaluate the current and future literature in the area of pharmacogenomics
-Identify key sources and reliable databases with pharmacogenomics knowledge base

Educational Outcomes
1. Section 1 Pharmaceutical Care
   1.1. Knowledge of Basic Science, Math, Economic and Regulatory Principles
   1.1.2. Utilize concepts in biochemistry, molecular biology, pharmacology, and immunology to understand the actions and uses of current and future drugs. 2
   1.1.4. Demonstrate knowledge of drug mechanisms of action and toxicities.
1.1.5. Demonstrate knowledge of physiochemical, pharmacokinetic, and pharmacodynamic principles underlying drug disposition and elimination.

1.1.6. Demonstrate knowledge of pharmacogenomics pertinent to the individualization of drug therapy.

1.5. Assess and Interpret Patient Information
1.5.6. Assess the patient for possible adverse drug reactions.
1.5.7. Identify toxic and suboptimal drug therapy.

1.6. Design and Implement a Patient-Specific Pharmaceutical Care Plan
1.6.1. Utilize basic science, math, economic and therapeutic principles in selecting and justifying drug therapy for a patient.
1.6.5. Justify recommendations with supporting evidence from appropriate sources.

4. Section 4: General Abilities
4.1. Find, observe, analyze, evaluate, apply and synthesize information to solve problems and make informed, rational, responsible and ethical decisions. (Cognitive Abilities)
4.2. Relay and respond to information effectively and appropriately using verbal, non-verbal, written and technological methods of communication. (Ability to Communicate)

Course Evaluation
Based on content from lecture

<table>
<thead>
<tr>
<th>2 Exams</th>
<th>3 Quizzes</th>
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<tr>
<td>85%</td>
<td>15%</td>
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Exams: All exams must be returned to the course instructor in class on the day on which it is made available for review. Failure to do so will result in a grade of zero for the examination. Students will have 3 school days to review an exam after grades are made available to identify problem areas, verify grading or contest answers to questions. Exams will not be available and grades will not be revised after this time period.

Quizzes will be held on the dates shown in the schedule and will cover the material presented since the last exam.

Course Grade Scale:

<table>
<thead>
<tr>
<th>92 to 100</th>
<th>85 to 91</th>
<th>80 to 84</th>
<th>75 to 79</th>
<th>70 to 74</th>
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<tr>
<td>4.0</td>
<td>3.5</td>
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<td>65-69</td>
<td>60-64</td>
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<td>1.5</td>
<td>1.0</td>
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Required Text / Materials
No textbook will be required for the course.

Attendance Policy
Students are expected to attend each class period. Make-up assignments or quizzes will not be provided unless previously discussed with the instructors. A grade of zero will be used in place of a missed assignment, quiz, or practical assessment. Please contact Drs. McCune, VanWert, or Bommareddy in the case of an absence or expected delay. All communications should be initiated at least 30 minutes before the designated class period.


**Academic Honesty**
Any student who violates the Intellectual Responsibility and Plagiarism Policy as stated in the University Student Handbook will be subject to disciplinary action which may include failure of the course.

**Civility Policy**
Civil behavior and attitude are expected for all students. Lack of respect for other students, professors or staff as demonstrated by comments, tone of voice, or disruptive behavior will not be tolerated. The use of cell phones and/or texting during class is prohibited without prior permission from the instructor. Students in violation of this policy may be subject to dismissal from class, and re-admission following completion of an essay on civility and professionalism.

**Schedule of Topics**

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<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td></td>
<td>Molecular Biology Review &amp; Introduction to Pharmacogenomics (PG)</td>
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<td></td>
<td>Genetic Predispositions and Resistance to Disease &amp; DNA Analysis</td>
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<tr>
<td><strong>Quiz 1</strong></td>
<td>Cytochrome P450 Polymorphisms and Drug Metabolism</td>
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<td>PG in Pulmonary Disorders (asthma and cystic fibrosis)</td>
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<td>PG in Cardiology (warfarin and statins)</td>
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<td></td>
<td>PG in Cardiology (clopidogrel and beta-blockers)</td>
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<tr>
<td><strong>Exam 1</strong></td>
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<td>Recess</td>
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<td>PG in Diabetes</td>
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<td>PG in Infectious Disease</td>
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<tr>
<td><strong>Quiz 2</strong></td>
<td>PG in Oncology (solid tumors)</td>
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<td>PG in Oncology (hematologic malignancies)</td>
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<td>PG in Psychiatry (depression)</td>
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<td><strong>Quiz 3</strong></td>
<td>PG in Psychiatry (anti-psychotics)</td>
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<td></td>
<td>Recess</td>
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<td>Toxicogenomics</td>
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<td></td>
<td>Ethical, legal, and social issues</td>
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<tr>
<td><strong>Final Exam</strong></td>
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