The University Of Toledo
New Graduate Course Proposal
* denotes required fields

1. College*: College of Pharmacy
Department*: Pharmacology

2. Contact Person*: William Messer
   Phone: 383-1958 (xxx-xxxx)
   Email: william.messer@utoledo.edu

3. Alpha/Numeric Code (Subject area - number)*: PHCL - 5200

4. Proposed title*: Experimental Therape
   Proposed effective term*: 201410 (e.g. 201140 for 2011 Fall)

5. Is the course cross-listed with another academic unit?
   Yes No

   Approval of other academic unit (signature and title)

   Is the course offered at more than one level?
   Yes No

   If yes, an undergraduate course proposal form must also be submitted. If the undergraduate course is new, complete the New Undergraduate Course Proposal; if the undergraduate course is existing, submit an Undergraduate Course Modification Proposal.

6. Credit hours*:
   Fixed: 3
   or
   Variable: 
   to

7. Delivery Mode:
   Primary*
   Secondary
   Tertiary
   a. Activity Type *
      Lecture
   b. Minimum Credit Hours *
      3
      Maximum Credit Hours *
      3
   c. Weekly Contact
      3
      
https://curriculumtracking.utoledo.edu/GradNewCourse.aspx?Mode=View&ID=PHCL5200
Hours *

8. Terms offered: ☑ Fall ☐ Spring ☐ Summer

Years offered: ☒ Every Year ☐ Alternate Years

9. Are students permitted to register for more than one section during a term? ☐ No ☑ Yes

May the courses be repeated for credit? ☐ No ☑ Yes

Maximum Hours

10. Grading System*:

- ☑ Normal Grading (A-F, PS/NC, PR, I)
- ☐ Passing Grade/No Credit (A-C, NC)
- ☐ Credit/No Credit
- ☐ Grade Only (A-F, PR, I)
- ☐ Audit Only
- ☐ No Grade

11. Prerequisites (must be taken before): i.e. C or higher in (BIOE 4500 or BIOE 5500) and C or higher in MATH 4200

- ☑ B- or higher in PHCL 5100 or PHCL 7100

- ☐ PIN (Permission From Instructor)
- ☐ PDP (Permission From Department)

Co-requisites (must be taken together):

12. Catalog Description* (75 words Maximum)

The course will expand upon material covered in Experimental Therapeutics I and focus on the drug development process. Practical applications include the design of in vitro and in vivo screens for drug activity, improvement of pharmacokinetic properties and integration of medicinal chemistry with pharmacology in a drug development paradigm.
Hours *

8. Terms offered: ☐ ☑ ☐
   Fall Spring Summer

   Years offered: ☐ ☐
   Every Year Alternate Years

   Are students permitted to register for more than one section during a term? ☐ ☑

   May the courses be repeated for credit? ☐ ☑

   Maximum Hours

10. Grading System*:

   ☐ Normal Grading (A-F, PS/NC, PR, I)
   ☐ Passing Grade/No Credit (A-C, NC)
   ☐ Credit/No Credit
   ☐ Grade Only (A-F, PR, I)
   ☐ Audit Only
   ☐ No Grade

11. Prerequisites (must be taken before): i.e. C or higher in (BIOE 4500 or BIOE 5500) and C or higher in MATH 4200

   ☐ B- or higher in PHCL 5100 or PHCL 7100

   ☐ PIN (Permission From Instructor) ☐ PDP (Permission From Department)

   Co-requisites (must be taken together):

12. Catalog Description* (75 words Maximum)

   The course will expand upon material covered in Experimental Therapeutics I and focus on the drug development process. Practical applications include the design of in vitro and in vivo screens for drug activity, improvement of pharmacokinetic properties and integration of medicinal chemistry with pharmacology in a drug development paradigm.
13. Attach a syllabus and an electronic copy of a complete outline of the major topics covered. Click here for template.

<table>
<thead>
<tr>
<th>File Type</th>
<th>View File</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syllabus</td>
<td>View</td>
</tr>
</tbody>
</table>

**Course Approval:**

Department Curriculum Authority: Ezdihar Hassoun  Date: 2012/11/05

Department Chairperson: William S. Messer, Jr.  Date: 2012/11/05

College Curriculum Authority or Chair: Surya Nauli  Date: 2012/12/04

College Dean: Wayne Hoss  Date: 2012/12/04

Graduate Council:  Date: 2-5-2013

Dean of Graduate Studies:  Date: 2-5-2013

Office of the Provost:  Date:  

**Administrative Use Only**

Effective Date:  

CIP Code:  

Subsidy Taxonomy:  

Program Code:  

Instructional Level:  

The following requirements will be differentiated for courses that are co-listed for Masters (5000 or 6000) and Ph.D. (7000 or 8000) levels:

Masters students will need to complete successfully all course requirements as indicated in the syllabus. They should be able to achieve and demonstrate comprehensive understanding of course topics through class discussion, assignments, quizzes and exams.

To complete the course requirements, Ph.D. students will need to demonstrate an extended expertise in the course topics. They also should demonstrate independent scholarly activity and creativity to the class instructor. The ability of the Ph.D. level students to synthesize scientific data/information, develop original ideas/hypotheses and formulate independent research studies/proposals will be evaluated through additional assignments and readings, or by demonstrating leadership roles in class discussion or other collaborative settings.
PHCL 5200
Experimental Therapeutics II
Course Syllabus Spring 2014

Instructor(s): Dr. William S. Messer, Jr.
Office/Office Hours: HEB 274C, M-W, 3:00 to 5:00 p.m.
Phone: 419-383-1958
Email: william.messer@utoledo.edu

Class Time and Location: MWF, 8:00 to 8:50 a.m.

Primary Communication Method: Lecture

Course Description: The course will expand upon material covered in Experimental Therapeutics I and focus on the drug development process. Practical applications include the design of in vitro and in vivo screens for drug activity, improvement of pharmacokinetic properties and integration of medicinal chemistry with pharmacology in a drug development paradigm.

Course Objectives:
1) By the end of the semester, students will be able to outline the steps involved in the drug development process and identify critical issues that must be addressed at each step.
2) Students will be able to identify suitable targets for drug development and identify primary and secondary assays for evaluating drug activity.
3) Students will also be able to develop strategies for modifying lead compounds to enhance pharmacokinetic properties.
4) Students will be able to apply advanced principles of pharmacology to the development of new therapeutics by writing a research paper that describes in detail a comprehensive drug development project.


Course Policies:
General- Students are expected to attend classes, although attendance is not routinely taken. In the event of absence from class, students will be responsible for completing all assignments.

Exams- Two exams will be given during the semester. Each exam will be worth 100 points.

Research paper- A research paper (worth 100 points) will be due by Friday of the 15th week of class.

Make-Up Exams- Make-up examinations will be given only to those students who obtain an excused absence from the instructor prior to the examination or during the first class session following the
examination. Late excuses will not be accepted. Make-up examinations will be scheduled only during the final examination period and may be administered in essay format.

**Academic Dishonesty Statement**- Cheating on exams will not be tolerated. Students guilty of cheating will be prosecuted according to College and University policies.

**Students with Disabilities Statement**- Students with disabilities who believe they may need academic accommodations are encouraged to speak with me after class and to contact the Office of Accessibility (Rocket Hall 1820; 419.530.4981; officeofaccessibility@utoledo.edu) as soon as possible for more information and/or to initiate the process for accessing academic accommodations.

**Course Grade**: Final course grades will be determined as a percentage of the total accumulated points of the two examinations administered during the semester and the research paper (300 possible points).

**Grading Scale**: The following grading scale will be used:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Numerical average (%)</th>
<th>Quality points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90.0-100</td>
<td>4.0</td>
</tr>
<tr>
<td>A-</td>
<td>88.5-89.9</td>
<td>3.67</td>
</tr>
<tr>
<td>B+</td>
<td>86.5-88.4</td>
<td>3.33</td>
</tr>
<tr>
<td>B</td>
<td>80.0-86.4</td>
<td>3.0</td>
</tr>
<tr>
<td>B-</td>
<td>78.5-79.9</td>
<td>2.67</td>
</tr>
<tr>
<td>C+</td>
<td>76.5-78.4</td>
<td>2.33</td>
</tr>
<tr>
<td>C</td>
<td>68.5-76.4</td>
<td>2.0</td>
</tr>
<tr>
<td>D+</td>
<td>66.5-68.4</td>
<td>1.33</td>
</tr>
<tr>
<td>D</td>
<td>60.0-66.4</td>
<td>1.0</td>
</tr>
<tr>
<td>D-</td>
<td>58.5-59.9</td>
<td>0.67</td>
</tr>
<tr>
<td>F</td>
<td>0-58.4</td>
<td>0</td>
</tr>
</tbody>
</table>

**Lecture Topics and Exams Schedule**:

- **Week 1-3**: Drug discovery process
- **Week 4**: In vitro testing
- **Week 5**: In vivo testing
- **Week 6**: In silico model design
- **Week 7**: Proteomics/genomics in drug design
- **Week 8**: Physical properties in drug design (Exam I)
- **Week 9**: Structure activity relationship
examination. Late excuses will not be accepted. Make-up examinations will be scheduled only during the final examination period and may be administered in essay format.

**Academic Dishonesty Statement** - Cheating on exams will not be tolerated. Students guilty of cheating will be prosecuted according to College and University policies.

**Students with Disabilities Statement** - Students with disabilities who believe they may need academic accommodations are encouraged to speak with me after class and to contact the Office of Accessibility (Rocket Hall 1820; 419.530.4981; officeofaccessibility@utoledo.edu) as soon as possible for more information and/or to initiate the process for accessing academic accommodations.

**Course Grade:** Final course grades will be determined as a percentage of the total accumulated points of the two examinations administered during the semester and the research paper (300 possible points).

**Grading Scale:** The following grading scale will be used:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Numerical average (%)</th>
<th>Quality points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90.0-100</td>
<td>4.0</td>
</tr>
<tr>
<td>A-</td>
<td>88.5-89.9</td>
<td>3.67</td>
</tr>
<tr>
<td>B+</td>
<td>86.5-88.4</td>
<td>3.33</td>
</tr>
<tr>
<td>B</td>
<td>80.0-86.4</td>
<td>3.0</td>
</tr>
<tr>
<td>B-</td>
<td>78.5-79.9</td>
<td>2.67</td>
</tr>
<tr>
<td>C+</td>
<td>76.5-78.4</td>
<td>2.33</td>
</tr>
<tr>
<td>C</td>
<td>68.5-76.4</td>
<td>2.0</td>
</tr>
<tr>
<td>D+</td>
<td>66.5-68.4</td>
<td>1.33</td>
</tr>
<tr>
<td>D</td>
<td>60.0-66.4</td>
<td>1.0</td>
</tr>
<tr>
<td>D-</td>
<td>58.5-59.9</td>
<td>0.67</td>
</tr>
<tr>
<td>F</td>
<td>0-58.4</td>
<td>0</td>
</tr>
</tbody>
</table>

**Lecture Topics and Exams Schedule:**

- **Week 1-3**  
  Drug discovery process
- **Week 4**  
  In vitro testing
- **Week 5**  
  In vivo testing
- **Week 6**  
  In silico model design
- **Week 7**  
  Proteomics/genomics in drug design
- **Week 8**  
  Physical properties in drug design (Exam I)
- **Week 9**  
  Structure activity relationship
<table>
<thead>
<tr>
<th>Week 10</th>
<th>Efficacy vs potency vs therapeutic index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 11</td>
<td>FDA and drug development process</td>
</tr>
<tr>
<td>Week 12</td>
<td>Target selection in drug discovery and development</td>
</tr>
<tr>
<td>Week 13</td>
<td>Sources of new drugs</td>
</tr>
<tr>
<td>Week 14</td>
<td>Medicinal chemistry vs combinatorial chemistry</td>
</tr>
<tr>
<td>Week 15</td>
<td>Design a drug development project</td>
</tr>
</tbody>
</table>