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 no later than the second Tuesday of every month. Submit one signed original hard copy and a scanned electronic copy with all signatures to the Chair of the Curriculum Committee.

1. Originator: Name: Ajay Bommareddy, Adam VanWert, Ka Lok Hong
Department: Pharmaceutical Sciences
Phone and email: 570-408-4296, kalok.hong@wilkes.edu

2. Proposal Title: Master of Sciences in Pharmacology and Medicinal Chemistry

3. Check only one type of proposal: (double click on the appropriate check box and change default value to “checked”). Each different type of proposal must be submitted on a separate form.
   - New Program. (Major or Minor Degree Programs). This requires prior review and approval by the Provost and APC. Major = minimum of 30 credits, minor = minimum of 18 credits.
   - New Concentration, Track, or Certificate. The Provost determines if review and approval by APC is necessary. Concentration – minimum of 12 credits, certification, endorsement and track are discipline specific.
   - Elimination of Program. (Major or Minor Degree Programs). This requires prior review and approval by the Provost and APC.
   - Elimination of Concentration, Track, or Certificate. The Provost determines if review and approval by APC is necessary.
   - 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)

Indicate the number of course modification forms that apply to this proposal:
   9 Course Addition Form (Attach Syllabi: refer to Faculty Handbook for requirements)
   _______ Course Deletion Form
   _______ Course Change Form

4. 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 demand for graduate students in the area of pharmaceutical sciences and related fields is expected to rise in the next 10 years and currently there are more than 200 job openings within the state of Pennsylvania in the area of pharmaceutical and biological sciences. The objective of the proposed graduate program is to graduate students with highest level of knowledge and skills that suits the needs of the potential employers. The program is a 2-year research-oriented, thesis-track Master of Science program designed to build a solid foundation of the core knowledge in pharmacological and pharmaceutical sciences, with classical and contemporary topics and hands-on experimental experiences. Students in the program will also be trained to develop a high level of written and oral communication skills. One of the highlights of the program is to foster research techniques and methodology through exposure to a variety of molecular biology, synthetic chemistry and analytical techniques that are most commonly used in the current pharmaceutical and biochemical industry. This will be the first graduate program offered in the Nesbitt School of Pharmacy since its conception more than two decades ago in 1996. This proposed program will offer individualized learning and research experience with high standard to local, national and international students. The proposed graduate program aligns well the University’s Mission of educating our students for lifelong learning and success. In the program, research and mentoring activities undertaken by the faculty members will have the potential to generate innovative scholarly products that could garner national and international recognition of the University. This, in part, fulfills the University’s Vision and Values.

Program Admission Requirements

1) An online application through Wilkes University.
2) Undergraduate degrees in biological, chemical, biomedical or closely related discipline. Undergraduate degrees in bioengineering or chemical engineering may also be considered upon admission committee review.
3) Official undergraduate transcript with a minimum overall GPA of 3.0 or above on a 4.0 scale.
4) GRE score is not required, but is encouraged for applicants with minimal required undergraduate GPA.
5) Two letters of reference from scientists or engineers.
6) International applicants with undergraduate degrees from non-English speaking countries are required to submit TOEFL scores with their applications.

5. 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.

Program affected:

Minimal, Dr. Jeffrey Stratford from the Department of Biology has agreed to participate in teaching one course in the new program. Supported letters from Dr. Stratford and corresponding department chair, Dr. Michael Steel can be provided upon request.

Resources:
Wilkes University Curriculum Committee
PROPOSAL SUBMITTAL FORM

• Zbigniew Witczak, Ph.D – Medicinal chemistry & Carbohydrate chemistry
• Adam L VanWert, PharmD, Ph.D – Pharmacology & Toxicology
• Ka Lok Hong, Pharm.D, Ph.D – Pharmacology & Nanomedicine
• Ajay Bommareddy, Ph.D – Pharmacology & Cancer Biolog
• Harvey Jacobs, Ph.D – Pharmaceutics

Effect on the curriculum of all potentially affected programs:
Minimal to none. Graduate students from other disciplines may have additional elective courses to choose from upon approval from affected programs and specific course instructor(s).

Potential effect to the curriculum of current programs, departments and courses:
New courses proposed in this program may also be suitable as elective course for students in the Doctor of Pharmacy program. This will increase the variety of elective course currently available to Pharm.D. students.

6. Program Outline. (Not applicable for incidental changes).

Plan of Study

Year 1 Fall (9 credits)
PHS 571 Responsible conduct in biomedical research (1) (New)
PHS 573 Literature Evaluation in Pharmaceutical and Pharmacological Sciences I (1) (New)
PHS 575 Introduction to Research Study Design and Proposal Writings (1) (New)
PHS 577 Experimental Methods in Pharmacology and Toxicology (2) (New)
PHS 579 Principle of Pharmacology and Medicinal Chemistry & Fundamentals of Drug Disposition (3) (New)
PHS 581 Research Orientation (1) (New)

Year 1 Spring (9 credits)
PHS 576 Topics in Pharmacology (3) (New)
PHA 552 Principles of Bioorganic Medicinal Chemistry (3) (Existing course)
PHS 578 Research (3) (New)

Summer
Students are required to participate in a minimum of eight (8) weeks of summer research activities with their respective primary thesis advisor. Individual student will be paid up to $3000 for the summer experience (paid from program operating budget). This is a mandatory experience and are not counted for credit hours.

Year 2 Fall (9 credits)
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PHS 572 Literature Evaluation in Pharmaceutical and Pharmacological Sciences II (1) (New)
PHS 583 Thesis (3)
Elective (2 or 3)
Elective (2 or 3)

Year 2 Spring (9 credits)
PHS 574 Literature Evaluation in Pharmaceutical and Pharmacological Sciences III (1) (New)
PHS 584 Thesis (3)
BIO 347 Biostatistics (3) (Department of Biology) (Dr. Stratford will submit a separate proposal for cross listing with additional graduate level component)
Elective (2)

Electives (6 credits) Courses currently offered by the Department of Pharmaceutical Sciences
Pharmaceutics I
Pharmaceutics II
Introduction to nanomedicine
Principles of toxicology
Phytochemicals in health/disease
Independent study (1-3), maximum of 4 credits total may be taken

7. New Program Assessments: (For new programs ONLY)

All new major programs reviewed through the Curriculum Committee must complete this section. Please consult the following page for guidance in developing an assessment plan: https://wilkes.edu/about-wilkes/university-committees/assessment/assessment-planning.aspx

a. Please list program-level student learning outcomes (SLOs) that all program majors should be able to demonstrate upon graduation from the program. SLOs should be worded such that student performance can be measured directly.

Educational Outcomes for the Master’s Degree Program in Pharmacology and Medicinal Chemistry

Goal 1: Develop foundational knowledge required in pharmacology and medicinal chemistry to support higher-level objectives.

1.1. Discuss the U.S. regulatory pathway for development and approval of new molecular entity drugs.
1.2. Discuss the U.S. regulatory pathway for development and approval of generic drugs with bioequivalence, and describe biosimilars.

1.3. Discuss the disposition of drugs in humans, including factors affecting absorption, distribution, metabolism, and elimination.

1.4. Describe the structural and chemical properties of drug molecules pertinent to pharmacokinetics and pharmacodynamics.

1.5. Describe the location and function of organelle, cellular, tissue, and organismal macromolecules that are common drug targets.

1.6. Describe the therapeutic mechanisms of action of major drug classes at the organellar, cellular, tissue, and organismal level.

1.7. Describe the mechanisms of toxicity of major drug classes at the organellar, cellular, tissue, and organismal level.

1.8. Describe common research techniques and instruments, and identify their appropriate use when presented with a research question.

1.9. Identify and employ appropriate statistical tests to determine significance of biological data.

**Goal 2: Develop foundational laboratory skills necessary to address scientific questions.**

2.1 Demonstrate competency in executing experiments employing in vitro and in vivo models.

2.2 Demonstrate competency in determining DNA, RNA, and protein identity, quality, and quantity using accepted methodology.

2.3 Demonstrate competency in utilizing small-scale and multi-well format instruments to measure cell death, signaling, and homeostasis.

2.4 Demonstrate competency in using High-Performance or Ultra-High-Performance Liquid Chromatography to identify and quantify analytes of interest from biological and non-biological matrices.

**Goal 3: Effectively communicate verbally, visually, and in written format.**

3.1 Demonstrate effective writing to express scientific background, hypotheses, research methods, and discoveries.

3.2 Demonstrate effective speaking to express scientific background, hypotheses, research methods, and discoveries.

3.3 Employ appropriate use of audio and visual tools when presenting scientific information to an audience.

3.4 Demonstrate professional verbal and nonverbal communication with scientists and non-scientists.

**Goal 4: Practice science with the highest ethical standards.**

4.1 When required, limit use of animals in research to the lowest quantity and shortest duration deemed necessary to achieve adequate statistical power, as determined by published standards or power analysis when required.
4.2 Choose the most humane methods for handling animal subjects, abiding by the Guidelines for Care and Use of Laboratory Animals.

4.3 Identify and follow the most ethical methods for reporting scientific findings.

Goal 5: Professional development

5.1 Demonstrate integrity, trustworthiness, flexibility and respect to colleagues and other personnel.

5.2 Display accountability and preparedness consistent with a commitment to excellence.

b. Please briefly describe current plans for how student performance on each program-level SLO will be assessed. Be sure to answer where (which courses), when (frequency), and how (assessment method) for each SLO.

Please see attached syllabus for individual course assessment.

c. Please identify by name any external accreditation agency or agencies that will influence assessment planning. Include standards or requirements from that accreditor that must be followed when developing the program’s assessment plan. You are encouraged to share specific, current web links to relevant content when standards or requirements related to assessment are substantial.

No additional accreditation are needed. Mid-state is sufficient.

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.

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<tr>
<th>Print Name/Title</th>
<th>Signature</th>
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<tr>
<td>Department chair(s) of all potentially affected programs</td>
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<td>Print Name/Title</td>
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<td>Dean (s) of any potentially affected College/School.</td>
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<th>Print Name</th>
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<td>Registrar</td>
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<tr>
<th>Print Name</th>
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<tr>
<td>Provost</td>
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<td></td>
<td>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.</td>
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<thead>
<tr>
<th>Print Name</th>
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<th>Date</th>
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<tbody>
<tr>
<td>Chair, Academic Planning Committee.</td>
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<tr>
<td>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>
<th>Date</th>
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<tbody>
<tr>
<td>Chair, General Education Committee.</td>
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<tr>
<td>For revisions to General Education program only. (Signature indicates that the proposal has been approved by GEC).</td>
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</table>
1. Course Title: Responsible conduct in biomedical research

2. Course Number: PHS 571
   Coordinate with Registrar to insure course number is available

3. Course Credits: ___1___
   Classroom Hours___1___ Lab Hours______ Other______

4. Course Pre-requisites: Enrolled in the MS program, or instructor permission

5. Course Co-requisites: None

6. Effective Date of Addition (semester/year) ___Fall 2019____

7. Course Description (as proposed for the Bulletin):
   This is an introductory course in ethics of science and scientific research. The course is designed to provide a foundation for thinking about and recognizing the ethical dimension of a variety of issues. The governing principle of the course is to provide students with an opportunity to become familiar with current ethical debates in a range of scientific fields. Topics will include: misconduct in research, conflicts of interest and scientific objectivity, publication and peer review, intellectual property, and ethical decision making.

8. Required Documentation:

Nesbitt School of Pharmacy
Department of Pharmaceutical Sciences

PHS 571
Introduction to Ethics in Research

Instructor: Ka Lok Hong Pharm.D., Ph.D.
Course Title: Introduction to Ethics in Research
Course Number: PHS 571

Course Credits: 1

Class Time & Location: Once a week, 50min; Room: TBA

Course Description

This is an introductory course in ethics of science and scientific research. The course is designed to provide a foundation for thinking about and recognizing the ethical dimension of a variety of issues. The governing principle of the course is to provide students with an opportunity to become familiar with current ethical debates in a range of scientific fields. Topics will include: misconduct in research, conflicts of interest and scientific objectivity, publication and peer review, intellectual property, and ethical decision making.

Ultimately, each student will engage these issues with the help of philosophical tools, apply these tools to case studies, and be challenged to think broadly about the role of scientists in society as well as learn how to critically assess the ethical consequences of science for the human race.

Goals:
The overall learning goals of this course are to:
1. Introduce the student to the key philosophical concepts related to responsible conduct of research
2. Improve the student’s understanding of current debates in, and case studies of, ethical issues in basic scientific research
3. Further develop the student’s philosophical thinking about real-world ethical issues/challenges in scientific research

Prerequisites: Enrolled in the MS Pharmacology and Medicinal Chemistry program or permission from the instructor

Course Outcomes:
Upon completion of the course, students should able to:
1. Describe and explain the rationale behind philosophical ethical positions
2. Realize the responsibilities that scientists, research subjects and citizens jointly share for the wise direction and use of research
3. Demonstrate mastery of the goals noted above orally and in written form

Educational Outcomes for the Master’s Degree Program Pertinent to this Course

3.1 Demonstrate effective writing to express scientific background, hypotheses, research methods, and discoveries.
3.2 Demonstrate effective speaking to express scientific background, hypotheses, research methods, and discoveries.
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3.3 Employ appropriate use of audio and visual tools when presenting scientific information to an audience.

3.4 Demonstrate professional verbal and nonverbal communication with scientists and non-scientists.

3.5 When required, limit use of animals in research to the lowest quantity and shortest duration deemed necessary to achieve adequate statistical power, as determined by published standards or power analysis when required.

3.6 Choose the most humane methods for handling animal subjects, abiding by the Guidelines for Care and Use of Laboratory Animals.

3.7 Identify and follow the most ethical methods for reporting scientific findings.

3.8 Demonstrate ethical standard in research.

3.9 Maintain integrity in research data management.

Course Evaluation:

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Weight (%)</th>
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<tbody>
<tr>
<td>Active participation</td>
<td>20%</td>
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<tr>
<td>Case study</td>
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<tr>
<td>Oral presentation</td>
<td>15%</td>
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<tr>
<td>Written reflection</td>
<td>15%</td>
</tr>
<tr>
<td>5 to 10 Online Quizzes</td>
<td>25%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25%</td>
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<tr>
<td>Total</td>
<td>100%</td>
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Assessment and Evaluations:

1. **Participation:**

   Students are expected to attend and actively engage with materials presented where mutual respect is required.

2. **Case Study:**

   Case studies should be based on current events – items found in such publications as the New York Times, Discover, Science, etc. Students should attempt to present a case study that is related to the topic of the lecture material discussed in the week they have chosen to present.
   - The oral presentation component (15%) of the case study will be done as individual. The presentation must be 10 minutes long.
   - The written reflection component of the case study (15%) is due the Monday following the oral presentation. Reflection are to be written individually. Reflections should be 500 – 1000 words in length, double-spaced, 1” margins all around, 12pt Times Roman or 11pt Arial font. Content should reflect class discussion and feedback about oral presentations.

3. **Online Quizzes:**
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Quizzes will be short answer, true/false, and/or multiple choice questions, and will be based on both weekly readings and material presented in lecture. Quizzes will evaluate student understanding and application of material presented in lectures. All quizzes are individual evaluations and academic honesty policies will be enforced. Only a bona fide personal or medical emergency will be considered as an excuse for missing a quiz. Make up quizzes will be given in a manner and time convenient to the instructor.

4. Final Exam:

The final exam will consist of multiple choice, short answer, and true/false questions. The content of these questions will come from both required reading assignments and material covered in lecture. Questions may also be related to the student case studies presented. Exams will be conducted in paper-based format.

Remediation Statement:
**Students who fail this course will be required to meet with the Director(s) of the MS program and the corresponding academic advisor to devise a mutually agreeable remediation plan.**

Attendance Policy:

Class attendance is mandatory. Any unexcused absence will result in a 0.5 point deduction from the final course grade (e.g., 4.0 becomes 3.5). In circumstances where the absence is excusable the student must contact Dr. Hong at 570-408-4296 or kalok.hong@wilkes.edu at least one-half hour before class.

Course Grade Scale:

<table>
<thead>
<tr>
<th>Grade Range</th>
<th>Course Grade</th>
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<tbody>
<tr>
<td>90 – 100</td>
<td>4.0</td>
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<tr>
<td>85 – 89</td>
<td>3.5</td>
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<td>79 – 84</td>
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<td>72 – 78</td>
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<td>66 – 71</td>
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<td>60 – 65</td>
<td>1.5</td>
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<td>&lt; 60</td>
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** Final grade is strictly awarded at the discretion of the instructor

Required Text:

No required text book, required readings (e.g. journals) as indicated by the instructor.

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.
As consistent with expectations of the practice environment, professional behavior and attitudes are expected for all students enrolled in professional courses. Professionalism is demonstrated by a student who:

- Uses appropriate use of verbal & non-verbal communication
- Is punctual
- Is reliable, dependable, and accountable for one’s actions
- Behaves in an ethical manner
- Produces quality work
- Accepts constructive criticism and modifies behavior if necessary
- Is cooperative – i.e. non-argumentative; willing and helpful
- Is non-judgmental – student demonstrates an attitude of open-mindedness towards others and situations; does not “stereotype” others or prejudge situations
- Communicates assertively – actively and appropriately engages in dialogue or discussion
- Is self-directed in undertaking tasks; self-motivated
- Is respectful – demonstrates regard for self, standardized patients, peers, faculty, staff, and university property
- Is empathetic – demonstrates appreciation of others’ positions; attempts to identify with others’ perspectives; demonstrates consideration towards others
- Handles stress – remains calm, levelheaded, and composed in critical, stress or difficult situations
- Is an active learner – seeks knowledge; asks questions, searches for information, takes responsibility for own learning
- Is confident – acts and communicates in a self-assured manner, yet with modesty and humility
- Follows through with responsibilities – if task is left incomplete or problem is not resolved, student seeks aid
- Is diplomatic – is fair and tactful in all dealings with patients, peers, faculty, and staff.
- Is appropriately attired
- Demonstrates a desire to exceed expectations – goes “above and beyond the call of duty,” attempts to exceed minimal standards and requirements for tasks/assignments/responsibilities
- Utilizes time efficiently – allocates and utilizes appropriate amounts of time to fulfill responsibilities; utilizes others’ time wisely

Lack of respect for other students, professors or staff as demonstrated by comments, tone of voice, or disruptive behavior will **not be tolerated**. Everyone has a right to be heard and should be able to express their constructive comments without ridicule. Students who violate the professionalism policy may be dismissed from class. Re-entry into the class can only occur after the student writes an essay on professionalism and civility; the essay must be deemed acceptable by the instructors. Depending on the specifics of the violation, other measures may be taken by the instructors, including but not limited to failure of the course.

All cell phones, pagers etc. are to be on **silent mode** during class or **turned off**. Cell phones and pagers are **NOT** to be answered during class time.
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<tr>
<th>Date</th>
<th>Day</th>
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<tr>
<td>Week 1</td>
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<td>Course Introduction</td>
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<td>Week 2</td>
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<td>Ethical Theory &amp; Moral Reasoning</td>
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<td>Week 3</td>
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<td>Case Studies</td>
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<td>Week 4</td>
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<td>Data Acquisition &amp; Management, Publication &amp; Peer Review: Part 1</td>
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<tr>
<td>Week 5</td>
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<td>Data Acquisition &amp; Management, Publication &amp; Peer Review: Part 2</td>
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<td>Week 6</td>
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<td>Intellectual Property</td>
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<td>Week 7</td>
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<td>Science, Society, and Social Responsibility: Part 1</td>
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<td>Week 8</td>
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<td>Science, Society, and Social Responsibility: Part 2</td>
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<tr>
<td>Week 9</td>
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<td>Animal Subjects in Research</td>
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<td>Week 10</td>
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<td>Human Subjects in Research: Part 1</td>
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<tr>
<td>Week 11</td>
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<td>Human Subjects in Research: Part 2</td>
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<td>Week 12</td>
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<td>Vulnerable Human Subjects &amp; International Research</td>
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<td>Nov (Week 13)</td>
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<td>Thanksgiving Recess</td>
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<tr>
<td>Week 14</td>
<td></td>
<td>Environmental Ethics and Course Wrap-up</td>
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<tr>
<td>Week 15</td>
<td></td>
<td>Final Exam</td>
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</tbody>
</table>
1. Course Title: Literature Evaluation in Pharmaceutical and Pharmacological Sciences (II/III)

2. Course Number: PHS 572, PHS 573, PHS 574

   Coordinate with Registrar to insure course number is available

3. Course Credits: 1

   Classroom Hours 1           Lab Hours          Other

4. Course Pre-requisites: Enrolled in the MS program, or instructor permission

5. Course Co-requisites: None

6. Effective Date of Addition (semester/year) Fall 2019

7. Course Description (as proposed for the Bulletin):

   Literature Evaluation in Pharmaceutical and Pharmacological Sciences is a traditional scientific journal club. Students will present the background, content, and implications of a paper of their choosing to the audience. The audience is expected to participate actively.

Department of Pharmaceutical Sciences

PHS 572 573 574
Literature Evaluation in Pharmaceutical and Pharmacological Sciences (II/I/III)

Course Coordinator: Ka Lok Hong Pharm.D., Ph.D.
Course Title: Literature Evaluation in Pharmaceutical and Pharmacological Sciences (II/ I/ III) Sciences
Course Number: PHS 572 573 574

Course Credits: 1

Class Time & Location: 1 hour per week; Room: TBA (Total of 3 semesters)

Course Description

Literature Evaluation in Pharmaceutical and Pharmacological Sciences is a traditional scientific journal club. Students will present the background, content, and implications of a paper of their choosing to the audience. The audience is expected to participate actively.

Goals:
The overall learning goals of this course are to:
  1. Provide students with opportunities to evaluate the current literature in the field of pharmaceutical and pharmacological sciences

Prerequisites: Enrolled in the MS Pharmacology and Medicinal Chemistry program or permission from the instructor

Course Outcomes:
Upon completion of the course, students should able to:
  1. Critically interpret and present material, concepts, and implications from primary literature in a seminar setting

Educational Outcomes for the Master’s Degree Program Pertinent to the Course:

3.2 Demonstrate effective speaking to express scientific background, hypotheses, research methods, and discoveries.
3.3 Employ appropriate use of audio and visual tools when presenting scientific information to an audience.
3.4 Demonstrate professional verbal and nonverbal communication with scientists and non-scientists.

Course Structure:
Each meeting of JC will have an assigned presenter. This person will provide the coordinator with the title and citation information for the paper they have chosen to present at least one week in advance of their presentation. It is expected that the audience members have read the paper prior to each meeting. The presenter will present (using presentation software such as PowerPoint) the background and context of the paper, the paper itself, and interpret the implications of the paper.

Course Evaluation:
Pass/fail will be based upon the students’ ability to:
1. Effectively communicate scientific concepts.
2. Students will have at least 2 opportunities to present a journal article in the course.

Remediation Statement:
**Students who fail this course will be required to meet with the Director(s) of the MS program and the corresponding academic advisor to devise a mutually agreeable remediation plan.

Attendance Policy:
Class attendance is mandatory. Any unexcused absence will result in failure of the course. In circumstances where the absence is excusable the student must contact Dr. Hong at 570-408-4296 or kalok.hong@wilkes.edu at least one-half hour before class.

Course Grade Scale:
Pass/ Fail
** Final grade is strictly awarded at the discretion of the instructor

Required Text:
No required textbook, required readings (e.g. journals) as indicated by the instructor.

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.
Professionalism:
(adapted from Purkenson D., University of Washington)
As consistent with expectations of the practice environment, professional behavior and attitudes are expected for all students enrolled in professional courses. Professionalism is demonstrated by a student who:

- Uses appropriate use of verbal & non-verbal communication
- Is punctual
- Is reliable, dependable, and accountable for one’s actions
- Behaves in an ethical manner
- Produces quality work
- Accepts constructive criticism and modifies behavior if necessary
- Is cooperative – i.e. non-argumentative; willing and helpful
- Is non-judgmental – student demonstrates an attitude of open-mindedness towards others and situations; does not “stereotype” others or prejudge situations
- Communicates assertively – actively and appropriately engages in dialogue or discussion
- Is self-directed in undertaking tasks; self-motivated
- Is respectful – demonstrates regard for self, standardized patients, peers, faculty, staff, and university property
- Is empathetic – demonstrates appreciation of others’ positions; attempts to identify with others’ perspectives; demonstrates consideration towards others
- Handles stress – remains calm, levelheaded, and composed in critical, stress or difficult situations
- Is an active learner – seeks knowledge; asks questions, searches for information, takes responsibility for own learning
- Is confident – acts and communicates in a self-assured manner, yet with modesty and humility
- Follows through with responsibilities – if task is left incomplete or problem is not resolved, student seeks aid
- Is diplomatic – is fair and tactful in all dealings with patients, peers, faculty, and staff.
- Is appropriately attired
- Demonstrates a desire to exceed expectations – goes “above and beyond the call of duty,” attempts to exceed minimal standards and requirements for tasks/assignments/responsibilities
- Utilizes time efficiently – allocates and utilizes appropriate amounts of time to fulfill responsibilities; utilizes others’ time wisely

Lack of respect for other students, professors or staff as demonstrated by comments, tone of voice, or disruptive behavior will **not be tolerated**. Everyone has a right to be heard and should be able to express their constructive comments without ridicule. Students who violate the professionalism policy may be dismissed from class. Re-entry into the class can only occur after the student writes an essay on professionalism and civility; the essay must be deemed acceptable by the instructors. Depending on the specifics of the violation, other measures may be taken by the instructors, including but not limited to failure of the course.

All cell phones, pagers etc. are to be on **silent mode** during class or **turned off**. Cell phones and pagers are **NOT** to be answered during class time.
1. Course Title: Introduction to Research Study Design and Proposal Writings

2. Course Number: PHS 575

   Coordinate with Registrar to insure course number is available

3. Course Credits: 1

   Classroom Hours: 1

   Lab Hours: 

   Other: 

4. Course Pre-requisites: Enrolled in the MS program, or instructor permission

5. Course Co-requisites: None

6. Effective Date of Addition (semester/year) Fall 2019

7. Course Description (as proposed for the Bulletin):

   This is an introductory course in research methods and proposal writing. The course is
designed to give students experience in hypothesis and specific aims development and an
overview of the use of the scientific study design for solving basic science problems. The
governing principle of the course is to provide students with an interactive “how to” learning
experience during which they receive regular feedback on their work. The course objectives
will be accomplished through didactic lectures and small group and individual assignments.

8. Required Documentation:
Department of Pharmaceutical Sciences

PHS 575
Introduction to Research Study Design and Proposal Writings

Instructor: Ka Lok Hong Pharm.D., Ph.D.
Course Title: Introduction to Research Study Design and Proposal Writings

Course Number: PHS 575

Course Credits: 1

Class Time & Location: Once a week, 50min; Room: TBA

Course Description

This is an introductory course in research methods and proposal writing. The course is designed to give students experience in hypothesis and specific aims development and an overview of the use of the scientific study design for solving basic science problems. The governing principle of the course is to provide students with an interactive “how to” learning experience during which they receive regular feedback on their work. The course objectives will be accomplished through didactic lectures and small group and individual assignments.

Ultimately, each student will write a brief research proposal that follows a similar format to the NIH/NSF proposal. This will be accomplished through a series of individual assignments. In addition, students will present a research proposal from work accomplished through assignments to peers and School of Pharmacy faculty in a poster session at the end of the semester.

Goals:
The overall learning goals of this course are to:

1. Introduce the student to the components of a research proposal
2. Improve the student’s understanding of a systematic approach to research and problem solving
3. Further develop the student’s scientific writing and oral presentation skills in preparation for the master thesis proposal defense that is required in Year 1 Spring semester.

Prerequisites: Enrolled in the MS Pharmacology and Medicinal Chemistry program or permission from the instructor

Course Outcomes:
Upon completion of the course, students should able to:

1. Formulate a research problem that is relevant to basic science.
2. Construct a hypothesis and understand how it relates to the research problem.
3. Write and verbally convey a logical hypothesis.
4. Develop specific aims to address a hypothesis.
5. Develop and explain, in written and verbal form, the needed background information to support the rationale for a hypothesis.
6. Select an appropriate study design (including methods and measurements/outcomes) to address a hypothesis.
7. Appreciate the importance of collaboration and consensus building in research project development and problem solving.
8. Convey and convince, in writing and verbally, the importance and significance of a chosen research problem and develop a proposal to address the problem.
9. Understand the purpose for each component of a research proposal.
10. Construct a scientific poster for presentation of a research proposal.
11. Present a research proposal in a concise manner as a poster presentation

**Educational Outcomes for the Master’s Degree Program Pertinent to this Course**

3.1 Demonstrate effective writing to express scientific background, hypotheses, research methods, and discoveries.
3.2 Demonstrate effective speaking to express scientific background, hypotheses, research methods, and discoveries.
3.3 Employ appropriate use of audio and visual tools when presenting scientific information to an audience.
3.4 Demonstrate professional verbal and nonverbal communication with scientists and non-scientists.

**Course Evaluation:**

<table>
<thead>
<tr>
<th>Individual assignments</th>
<th>20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom presentation on poster components</td>
<td>15%</td>
</tr>
<tr>
<td>Poster presentation</td>
<td>20%</td>
</tr>
<tr>
<td>Proposal</td>
<td></td>
</tr>
<tr>
<td>• Idea and outline</td>
<td>5%</td>
</tr>
<tr>
<td>• Draft 1</td>
<td>10%</td>
</tr>
<tr>
<td>• Final draft</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
</tr>
</tbody>
</table>

**Assessment and Evaluations:**

1. **Individual assignments:**

There are four individual assignments with specific due dates. These assignments should be submitted via email.

#1 Formulate a research problem statement

#2 Write an introduction section, a hypothesis and specific aims to test the hypothesis

#3 Develop a study design and address issues potentially related to the use of human subjects or vertebrate animals

#4 Conclusion, limitation and future directions and a structured abstract of your proposal

2. **Classroom presentation on poster components:**

#1 Present research problem. It must be drug, pharmaceutical, or biomedical sciences related and something that interests you. Keep in mind that it has to be a topic that you can concisely present.
Wilkes University Curriculum Committee
PROPOSAL SUBMITTAL FORM

#2 Present poster title and introduction.

#3 Present hypothesis and specific aims.
#4 Present study design. Write a study design that you will use to accomplish your specific aims.

#5 Present conclusions, limitations, future directions. Summarize your expected findings, the limitations of your study and what steps you anticipate taking next. Your poster should be in its near final form.

#6 Final poster review and edits; structured abstract. Each student will present a final overview of their proposed project and poster. This is the last session before the practice session; all final edits should be incorporated by the end of this session. Each student is expected to submit a structured abstract of their poster for inclusion in the poster session program.

#7 Practice poster presentation. This is the final rehearsal! Posters should be in their final form and ready for printing.

3. **Poster presentation:**

Each student will give a poster presentation to a group of peer students and faculty.

Students will be graded on their presentation by faculty and also will receive feedback from fellow students (ungraded).

4. **Written proposal:**

The written proposal provides the opportunity for students to prepare their thesis proposal for Year 1 Spring proposal defense. Students are expected to complete this assignment individually with the addition of a bibliography. The final proposal should reflect comments and suggestions of the faculty over the course of the semester. The bibliography should be generated through referencing tools. In order for students to receive full credits on the written proposal, each section submission due dates must be followed precisely. Failure to do so will result in the loss of **0.5 grade point** for each late submission from the final course grade.

- Idea and outline due date: Sept XX - Oct XX 2019, 11:59 PM
- Draft 1 due date: Nov XX 2019, 11:59 PM
- Final paper due date: Dec XX 2019, 11:59 PM

Students must comply with the following format requirements:

- Always use 1” margins all around, 12pt Times Roman or 11pt Arial font.
- Word, WordPerfect or OpenOffice formats are acceptable. PDF files are not acceptable.
- All assignments will be submitted by email. File naming conventions are described below.
Wilkes University Curriculum Committee
PROPOSAL SUBMITTAL FORM

- The file title should be in the following format: Lastname_F19_Scientific_Writing_Proposal with the appropriate extension for your word processing program.
- If you turn in a file that contains a virus, you will receive a score of ZERO on the assignment.
- Reference style is student choice but must be consistent.

Remediation Statement:
**Students who fail this course will be required to meet with the Director(s) of the MS program and the corresponding academic advisor to devise a mutually agreeable remediation plan.

Attendance Policy:

Class attendance is mandatory. Any unexcused absence will result in a 0.5 point deduction from the final course grade (e.g., 4.0 becomes 3.5). In circumstances where the absence is excusable the student must contact Dr. Hong at 570-408-4296 or kalok.hong@wilkes.edu at least one-half hour before class.

Course Grade Scale:

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 – 100</td>
<td>4.0</td>
</tr>
<tr>
<td>85 – 89</td>
<td>3.5</td>
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<tr>
<td>79 – 84</td>
<td>3.0</td>
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<td>72 – 78</td>
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<td>66 – 71</td>
<td>2.0</td>
</tr>
<tr>
<td>60 – 65</td>
<td>1.5</td>
</tr>
<tr>
<td>&lt; 60</td>
<td>0.0</td>
</tr>
</tbody>
</table>

** Final grade is strictly awarded at the discretion of the instructor

Required Text:

No required text book, required readings (e.g. journals) as indicated by the instructor.

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.
Professionalism:  
(adapted from Purkenson D., University of Washington)

As consistent with expectations of the practice environment, professional behavior and attitudes are expected for all students enrolled in professional courses. Professionalism is demonstrated by a student who:

- Uses appropriate use of verbal & non-verbal communication
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- Produces quality work
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- Is empathetic – demonstrates appreciation of others’ positions; attempts to identify with others’ perspectives; demonstrates consideration towards others
- Handles stress – remains calm, levelheaded, and composed in critical, stress or difficult situations
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Tentative Schedule
<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td></td>
<td>Course Introduction/ Reviewing the Literature and Formulating a Research Problem</td>
</tr>
<tr>
<td>Week 2</td>
<td></td>
<td>How to write an introduction and construct a hypothesis</td>
</tr>
<tr>
<td>Week 3</td>
<td></td>
<td>Presentation</td>
</tr>
<tr>
<td>Week 4</td>
<td></td>
<td>Presentation</td>
</tr>
<tr>
<td>Week 5</td>
<td></td>
<td>How to write specific aims</td>
</tr>
<tr>
<td>Week 6</td>
<td></td>
<td>Presentation</td>
</tr>
<tr>
<td>Week 7</td>
<td></td>
<td>Presentation</td>
</tr>
<tr>
<td>Week 8</td>
<td></td>
<td>Study design, outcome measures, variables, and data</td>
</tr>
<tr>
<td>Week 9</td>
<td></td>
<td>Presentation</td>
</tr>
<tr>
<td>Week 10</td>
<td></td>
<td>Human subjects and vertebrate animals</td>
</tr>
<tr>
<td>Week 11</td>
<td></td>
<td>Limitation, problems, conclusions, future direction</td>
</tr>
<tr>
<td>Week 12</td>
<td></td>
<td>How to write a structured abstract, and give a great poster presentation</td>
</tr>
<tr>
<td>Nov (Week 13)</td>
<td></td>
<td><strong>Thanksgiving Recess</strong></td>
</tr>
<tr>
<td>Week 14</td>
<td></td>
<td>Course Wrap-up</td>
</tr>
<tr>
<td>Week 15</td>
<td></td>
<td>Poster Presentation</td>
</tr>
</tbody>
</table>
Wilkes University Curriculum Committee
PROPOSAL SUBMITTAL FORM

1. Course Title: Topics in Pharmacology

2. Course Number: PHS 576 __________________________
   Coordinate with Registrar to insure course number is available

3. Course Credits: ___3___
   Classroom Hours___3___  Lab Hours_____  Other______

4. Course Pre-requisites: Enrolled in the MS program, or instructor permission

5. Course Co-requisites: None

6. Effective Date of Addition (semester/year)   ___Fall 2019___________________

7. Course Description (as proposed for the Bulletin):

   The objectives of the course is to prepare students with the knowledge of pharmacological agents. The main focus is on the pharmacology of agents used in the treatment of different ailments. The course mainly comprises of a series of topics and student-led presentations. Topics covered include: signaling mechanisms, principles of cancer Biology, cancer chemoprevention, classification of anticancer agent, pharmacogenomics & personalized medicine, agents used in cardiovascular complications, pulmonary diseases, CNS, gastrointestinal, infectious diseases and endocrine disorders. The agents used in treating the disorders will be dealt in greater detail assignments.

8. Required Documentation:

Nesbitt School of Pharmacy
Wilkes University
Department of Pharmaceutical Sciences

PHS 576
Topics in Pharmacology

Instructors:  Adam L VanWert, Pharm.D., Ph.D.
            Ka Lok Hong Pharm.D., Ph.D.
            Ajay Bommareddy, Ph.D.

Course Title: Topics in Pharmacology

Course Number: PHS 576

Course Credits: 3

Meeting times & Location: Two times a week, M & W: 70min; Room: TBA
**Course objective:** The objectives of the course is to prepare students with the knowledge of pharmacological agents. The main focus is on the pharmacology of agents used in the treatment of different ailments. The course mainly comprises of a series of topics and student-led presentations. Topics covered include: signaling mechanisms, principles of cancer biology, cancer chemoprevention, classification of anticancer agent, pharmacogenomics & personalized medicine, agents used in cardiovascular complications, pulmonary diseases, CNS, gastrointestinal, infectious diseases and endocrine disorders. The agents used in treating the disorders will be dealt in greater detail.

**Prerequisites:** Good standing in the MS Pharmacology and Medicinal Chemistry program or permission from the instructor

**Educational Outcomes for the Master’s Degree Program Pertinent to this Course**

**Goal 1: Develop foundational knowledge required in pharmacology and medicinal chemistry to support higher-level objectives**

1.1 Discuss the disposition of drugs in humans, including factors affecting absorption, distribution, metabolism, and elimination.

1.2 Describe the therapeutic mechanisms of action of major drug classes at the organelle, cellular, tissue, and organismal level.

1.3 Describe the mechanisms of toxicity of major drug classes at the organelle, cellular, tissue, and organismal level.

**Goal 2: Effectively communicate verbally, visually, and in written format.**

2.1 Demonstrate effective writing to express scientific background, hypotheses, research methods, and discoveries.

2.2 Demonstrate effective speaking to express scientific background, hypotheses, research methods, and discoveries.

**Goal 3: Professional development**

3.1 Demonstrate integrity, trustworthiness, flexibility and respect to colleagues and other personnel.

3.2 Display accountability and preparedness consistent with a commitment to excellence.

**Course Evaluation:**

**Examination and assignments:** There will be one midterm and a final examination. Each student will be required to make a presentation on assigned topic and submit a professional paper on the presented topic. The paper will be due within one week of the presentation of the topic.

**Examination Policy**

Prior to the test, no student may enter the examination room. Upon entry into the examination room there will be no talking. All personal items (ie. book bags, electronic devices, etc.) must be kept at the front. Students should not wear hats with brims or watches. Students are not permitted to bring food or beverages to the exam. To ensure a fair and valid assessment of students’ skills and knowledge, students are not permitted to bring a reference, study materials, calculators or other electronic devices into the exam room unless prior permission was granted from the instructor. Other items that are strictly prohibited at your examination seat include cell phones, computers/tablets, and any smart device including google glass and fitness trackers.
Once you are at your assigned seat, you must remain seated. If you have a question, please raise your hand and the instructor will come to you. The examination paper should not be turned over until instructed to do so by the proctors. The student should check that the examination is complete and read all the instructions. After the first test is returned to the proctor, tardy students will not be allowed to enter the room and start the exam. That student will get a zero for the test. Upon exam completion, please do not congregate outside the classroom as this noise can be distracting to students still taking the exam. Students who do not turn in their exam promptly at the end of the exam session at the request of the proctor will receive a zero for that exam.

There will be no makeup of exams or quizzes for unexcused absences. A grade of zero will be given. In the case of an unusual circumstance in which the absence is excusable (for example, illness), the student must contact Dr. VanWert at least one-half hour before the exam. Students who are too ill to take an exam must see student health or their private physician for a written excuse. Make-up exams or assignments will be given at the discretion of the instructor(s) involved. Instructor(s) have the right to give a different make-up exam at their sole discretion.

During exam returns, students should remain in an area visible to the instructors. No electronic devices should be out during exam returns. Students are not permitted to make written notes regarding the exam. All exams must be returned to the course instructors in class on the day on which it is made available for review. Any violation of these policies will result in course failure. 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 for student review after this time period. For adjunct instructors and residents, all exam-related questions should be directed to course coordinators.

The School of Pharmacy has a technical standards document that can be found in your student handbook. The following is an excerpt regarding requesting accommodations. "Reasonable accommodations are services provided to individuals with disabilities that remove or lessen the effect of the disability-related barrier. Individuals without documented disabilities are not eligible for accommodations. Candidates with disabilities, in accordance with Wilkes University policy, and as defined by section 504 of 1973 Vocational Rehabilitation Act and the Americans with Disabilities Act of 1993, who may seek accommodations in order to meet the technical standards are encouraged to contact University College to discuss what reasonable accommodations, if any, the School of Pharmacy could make in order for the candidate to meet the standards. A student with a disability who requests accommodations will be required to submit this request in writing and provide pertinent supporting documentation in accordance with Wilkes University policies."

Course assessment:

- 1 Mid-term 100 points
- 1 Final exam 100 points
- 1 Presentation 50 points
- 1 Paper 50 points

Total possible points = 300 (100%)
Wilkes University Curriculum Committee
PROPOSAL SUBMITTAL FORM

Course Grade scale:

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 – 100%</td>
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<tr>
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<td>2.5</td>
</tr>
<tr>
<td>66 - 71%</td>
<td>2.0</td>
</tr>
<tr>
<td>60 - 65%</td>
<td>1.5</td>
</tr>
<tr>
<td>&lt;60%</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Recommended Text/Readings: TBD

Remediation Statement:
**Students who fail this course will be required to meet with the Director(s) of the MS program and the corresponding academic advisor to devise a mutually agreeable remediation plan.**

Attendance Policy:
Attendance will not be taken but is strongly encouraged. There will be no makeup of exams for unexcused absences and a grade of **zero** will be given. In the case of an unusual circumstance in which the absence is excusable, the student must contact the instructor(s) at least one-half hour before class. Make-up exams for these cases will be given at the discretion of the instructor(s).

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

Professionalism *(adapted from Purkenson D. University of Washington)*

As consistent with expectations of the practice environment, professional behavior and attitudes are expected for all students enrolled in professional practice courses. **Professionalism is demonstrated by a student who:**

- uses appropriate use of verbal & non-verbal communication
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- is reliable, dependable, accountable for one’s actions
- behaves in an ethical manner produces quality work,
- accepts constructive criticism and modifies behavior if necessary
- is cooperative – i.e. non-argumentative; willing and helpful
- is non-judgmental – student demonstrates an attitude of open-mindedness towards others and situations; does not “stereotype” others or prejudge situations
- communicates assertively – actively and appropriately engages in dialogue or discussion
- is self-directed in undertaking tasks, self-motivated
- is respectful – demonstrates regard for self, standardized patients, peers, faculty, staff and university property
- is empathetic – demonstrates appreciation of others’ positions; attempts to identify with other with others’ perspectives; demonstrates consideration towards others
- handles stress – remains calm, levelheaded, and composed in critical, stress or difficult situations
- is an active learner – seeks knowledge; asks questions, searches for information, takes responsibility for own learning
- is confident – acts & communicates in a self-assured manner, yet with modesty and humility
follows through with responsibilities – if task is left incomplete or problem is not resolved, student seeks aid
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is appropriately attired
demonstrates a desire to exceed expectations – goes “above and beyond the call of duty”, attempts to exceed minimal standards and requirements for tasks/assignments/responsibilities
utilizes time efficiently – allocates and utilizes appropriate amounts of time to fulfill responsibilities; utilizes others’ time wisely

Lack of respect for other students, professors or staff as demonstrated by comments, tone of voice, or disruptive behavior will **not be tolerated**.

Everyone has a right to be heard and should be able to express their constructive comments without ridicule. When expressing opinions etc. “I” phrases should be used. Lack of respect for other students, professors or staff as demonstrated by comments, tone of voice, disruptive behavior or absenteeism will **not be tolerated**. Additionally, there is to be no disruptive eating in the classroom.

Students who violate the professionalism policy can be dismissed from class. Re-entry into the class (including taking exams) can only occur after the student writes an essay on professionalism and civility; the essay must be deemed acceptable by the instructor and the department chair.

**Cell Phones, Pagers & Other Communication Devices**

All cell phones, electronic gadgets are to be on **silent mode** during class or **turned off**! Cell phones are **NOT** to be answered during class time.

**Schedule of Topics**

<table>
<thead>
<tr>
<th>Week</th>
<th>Monday</th>
<th>Wednesday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Principles of cancer Biology</td>
<td>Principles of cancer Biology</td>
</tr>
<tr>
<td>Week 2</td>
<td>Overview of cell cycle</td>
<td>Cancer prevention/chemoprevention</td>
</tr>
<tr>
<td>Week 3</td>
<td>Anticancer agents classification</td>
<td>Anticancer agents classification</td>
</tr>
<tr>
<td>Week 4</td>
<td>Immunologicals in cancer treatment</td>
<td>Immunologicals in cancer treatment</td>
</tr>
<tr>
<td>Week 5</td>
<td>Pharmacogenomics and personalized medicine</td>
<td>Pharmacogenomics and personalized medicine</td>
</tr>
<tr>
<td>Week 6</td>
<td>Cardiovascular Diseases</td>
<td>Agents used in hyperlipidemia</td>
</tr>
<tr>
<td>Week 7</td>
<td><strong>Mid Term</strong></td>
<td>Agents used in hypertension</td>
</tr>
<tr>
<td>Week 8</td>
<td>Agents used in pulmonary disorders</td>
<td>Agents used in pulmonary disorders</td>
</tr>
<tr>
<td>-----------</td>
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</tr>
<tr>
<td>Week 9</td>
<td>CNS</td>
<td>CNS</td>
</tr>
<tr>
<td>Week 10</td>
<td>Agents used in pain</td>
<td>Agents used in AD &amp; PD</td>
</tr>
<tr>
<td>Week 11</td>
<td>Endocrine system</td>
<td>Agents used in Diabetes/thyroid disorders</td>
</tr>
<tr>
<td>Week 12</td>
<td>Antibiotics</td>
<td>Antifungals/Antivirals</td>
</tr>
<tr>
<td>Week 13</td>
<td>Gastrointestinal Disorders</td>
<td>Allergy</td>
</tr>
<tr>
<td>Week 14</td>
<td>Student presentations</td>
<td>Student presentations</td>
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<tr>
<td>Week 15</td>
<td>Final exam</td>
<td></td>
</tr>
</tbody>
</table>

### Wilkes University Curriculum Committee
**COURSE ADDITION FORM** – page 5 of 9

1. Course Title: Experimental Methods in Pharmacology and Toxicology
2. Course Number: PHS 577____________________
   *Coordinate with Registrar to insure course number is available*

3. Course Credits: __2__
   - Classroom Hours __2__
   - Lab Hours ______
   - Other ______

4. Course Pre-requisites: Enrolled in the MS program, or instructor permission
5. Course Co-requisites: None

6. Effective Date of Addition (semester/year)   Fall 2019

7. Course Description (as proposed for the Bulletin):

The objective of this course is to introduce students to scientific research tools and techniques that are widely used in the fields of pharmacology and toxicology. Knowledge from this course will be useful for the student’s thesis work, and will also equip the student with a strong foundation for success in a variety of careers. Portions of the course will focus on regulatory requirements in drug development.

8. Required Documentation:

Nesbitt School of Pharmacy at Wilkes University

Department of Pharmaceutical Sciences

PHS 577

Experimental Methods in Pharmacology and Toxicology
Instructors:

Dr. Ajay Bommareddy
Dr. Ka Lok Hong
Dr. Adam L. VanWert
Course Title: Experimental Methods in Pharmacology and Toxicology

Course Number: PHS 577

Course Credit: 2

Class Time: M 9:00-9:50, W 9:00-10:50

Course Description: The objective of this course is to introduce students to scientific research tools and techniques that are widely used in the fields of pharmacology and toxicology. Knowledge from this course will be useful for the student’s thesis work, and will also equip the student with a strong foundation for success in a variety of careers. Portions of the course will focus on regulatory requirements in drug development.

Prerequisites: Enrolled in the MS Pharmacology and Medicinal Chemistry program or permission from the instructor

Learning Objectives: At the completion of this course, the student should be able to:

1. Explain the theory behind the major research tools and techniques used in pharmacology and toxicology
2. Choose the most appropriate tool or method to answer a scientific research question

Educational Outcomes for the Master’s Degree Program Pertinent to this Course

Goal 1: Develop foundational knowledge required in pharmacology and medicinal chemistry to support higher-level objectives.

1.1. Describe common research techniques and instruments, and identify their appropriate use when presented with a research question.

Goal 3: Effectively communicate verbally, visually, and in written format.

3.1 Demonstrate effective speaking to express scientific background, hypotheses, research methods, and discoveries.
3.2 Employ appropriate use of audio and visual tools when presenting scientific information to an audience.
3.3 Demonstrate professional verbal and nonverbal communication with scientists and non-scientists.

Course Assessment:

- Exam 1: 20%
Wilkes University Curriculum Committee
PROPOSAL SUBMITTAL FORM

- Exam 2: 20%
- Exam 3: 20%
- Quizzes: 20%
- 20% of the course grade may be calculated based on performance in quizzes and/or other projects. The remaining percentage of the course is derived from exams.

Course Grade Scale:

<table>
<thead>
<tr>
<th>Grade Range</th>
<th>Grade</th>
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</thead>
<tbody>
<tr>
<td>90 – 100</td>
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<td>85 – 89</td>
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<tr>
<td>60 – 65</td>
<td>1.5</td>
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<tr>
<td>&lt; 60</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Required Text: TBA

Attendance Policy:
Attendance will not be taken but is strongly encouraged. There will be no makeup of exams or quizzes for unexcused absences. A grade of zero will be given. In the case of an unusual circumstance in which the absence is excusable, the student must contact Dr. VanWert at least one-half hour before class. Make-up exams or assignments for these cases will be given at the discretion of the instructor.

Examination Policy
Prior to the test, no student may enter the examination room. Upon entry into the examination room there will be no talking. All personal items (ie. book bags, electronic devices, etc.) must be kept at the front. Students should not wear hats with brims or watches. Students are not permitted to bring food or beverages to the exam. To ensure a fair and valid assessment of students’ skills and knowledge, students are not permitted to bring a reference, study materials, calculators or other electronic devices into the exam room unless prior permission was granted from the instructor. Other items that are strictly prohibited at your examination seat include cell phones, computers/tablets, and any smart device including google glass and fitness trackers. Once you are at your assigned seat, you must remain seated. If you have a question, please raise your hand and the instructor will come to you. The examination paper should not be turned over until instructed to do so by the proctors. The student should check that the examination is complete and read all the instructions. After the first test is returned to the proctor, tardy students will not be allowed to enter the room and start the exam. That student will get a zero for the test. Upon exam completion, please do not congregate outside the classroom as this noise can be distracting to students still taking the exam. Students who do not turn in their exam promptly at the end of the exam session at the request of the proctor will receive a zero for that exam.
There will be no makeup of exams or quizzes for unexcused absences. A grade of zero will be given. In the case of an unusual circumstance in which the absence is excusable (for example, illness), the student must contact Dr. VanWert at least one-half hour before the exam. Students who are too ill to take an exam must see student health or their private physician for a written excuse. Make-up exams or assignments will be given at the discretion of the instructor(s) involved. Instructor(s) have the right to give a different make-up exam at their sole discretion.

During exam returns, students should remain in an area visible to the instructors. No electronic devices should be out during exam returns. Students are not permitted to make written notes regarding the exam. All exams must be returned to the course instructors in class on the day on which it is made available for review. Any violation of these policies will result in course failure. 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 for student review after this time period. For adjunct instructors and residents, all exam-related questions should be directed to course coordinators.

The School of Pharmacy has a technical standards document that can be found in your student handbook. The following is an excerpt regarding requesting accommodations. "Reasonable accommodations are services provided to individuals with disabilities that remove or lessen the effect of the disability-related barrier. Individuals without documented disabilities are not eligible for accommodations. Candidates with disabilities, in accordance with Wilkes University policy, and as defined by section 504 of 1973 Vocational Rehabilitation Act and the Americans with Disabilities Act of 1993, who may seek accommodations in order to meet the technical standards are encouraged to contact University College to discuss what reasonable accommodations, if any, the School of Pharmacy could make in order for the candidate to meet the standards. A student with a disability who requests accommodations will be required to submit this request in writing and provide pertinent supporting documentation in accordance with Wilkes University policies."

**Assignment Policy:**
Assignments are due in the beginning of class on the dates announced by the instructor. Assignments will not be accepted after the due date.

**Remediation:**
**Students who fail this course will be required to meet with the Director(s) of the MS program and the corresponding academic advisor to devise a mutually agreeable remediation plan.**

**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.
**Professionalism** *(adapted from Purkenson D. University of Washington)*

As consistent with expectations of a scientific work environment, professional behavior and attitudes are expected for all students. Professionalism is demonstrated by a student who:

- uses appropriate use of verbal & non-verbal communication
- is punctual
- is reliable, dependable, accountable for one’s actions
- behaves in an ethical manner produces quality work,
- accepts constructive criticism and modifies behavior if necessary
- is cooperative – i.e. non-argumentative; willing and helpful
- is non-judgmental – student demonstrates an attitude of open-mindedness towards others and situations; does not “stereotype” others or prejudge situations
- communicates assertively – actively and appropriately engages in dialogue or discussion
- is self-directed in undertaking tasks, self-motivated
- is respectful – demonstrates regard for self, standardized patients, peers, faculty, staff and university property
- is empathetic – demonstrates appreciation of others’ positions; attempts to identify with other with others’ perspectives; demonstrates consideration towards others
- handles stress – remains calm, levelheaded, and composed in critical, stress or difficult situations
- is an active learner – seeks knowledge; asks questions, searches for information, takes responsibility for own learning
- is confident – acts & communicates in a self-assured manner, yet with modesty and humility
- follows through with responsibilities – if task is left incomplete or problem is not resolved, student seeks aid
- is diplomatic – is fair and tactful in all dealings with patients, peers, faculty and staff.
- is appropriately attired
- demonstrates a desire to exceed expectations – goes “above and beyond the call of duty”, attempts to exceed minimal standards and requirements for tasks/assignments/responsibilities
- utilizes time efficiently – allocates and utilizes appropriate amounts of time to fulfill responsibilities; utilizes others’ time wisely

Lack of respect for other students, professors or staff as demonstrated by comments, tone of voice, or disruptive behavior will not be tolerated. Everyone has a right to be heard and should be able to express their constructive comments without ridicule. When expressing opinions etc. “I” phrases should be used. Additionally, there is to be no eating in the classroom. Students who violate the professionalism policy can be dismissed from class. Re-entry into the class can only occur after the student writes an essay on professionalism and civility; the essay must be deemed acceptable by the pharmacotherapeutics teaching team.
Cell Phones, Pagers & Other Communication Devices

All cell phones and other devices are to be on **silent mode** during class or **turned off**! Cell phones are **NOT** to be answered during class time.
<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Times</th>
<th>Topic</th>
<th>Sub-Topics</th>
</tr>
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<tbody>
<tr>
<td>Aug 27</td>
<td>Mon</td>
<td>9:00-9:50</td>
<td>Introduction</td>
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<tr>
<td>Aug 29</td>
<td>Wed</td>
<td>9:00-10:50</td>
<td>Overview of Methods in Pharmacology and Toxicology</td>
<td></td>
</tr>
<tr>
<td>Sept 3</td>
<td></td>
<td></td>
<td>Labor Day Recess</td>
<td></td>
</tr>
<tr>
<td>Sept 5</td>
<td>Wed</td>
<td>9:00-10:50</td>
<td>DNA and RNA: Basic Techniques</td>
<td>PCR, RT-PCR, Quantitative RT-PCR</td>
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<tr>
<td>Sept 10</td>
<td>Mon</td>
<td>9:00-9:50</td>
<td>Plasmid Types</td>
<td>Bare Minimum Plasmids, Promoter Types, Advanced Plasmids, Amplification vs. Expression</td>
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<tr>
<td>Sept 12</td>
<td>Wed</td>
<td>9:00-10:50</td>
<td>Protein Separation and Detection</td>
<td>Total Protein Assays (BCA, Bradford), ELISA, SDS-PAGE and General Protein Stains vs. Immunoblotting (standard and 2D gels),</td>
</tr>
<tr>
<td>Sept 17</td>
<td>Mon</td>
<td>9:00-9:50</td>
<td>Protein Separation and Detection</td>
<td>Immunofluorescence, Immunocytochemistry, LC-MSMS</td>
</tr>
<tr>
<td>Sept 19</td>
<td>Wed</td>
<td>9:00-10:50</td>
<td>Methods to Assess Protein-Protein, Protein-Nucleotide Interactions</td>
<td>Yeast Two-Hybrid, IP-Western, Chromatin Immunoprecipitation</td>
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<tr>
<td>Sept 24</td>
<td>Mon</td>
<td>9:00-9:50</td>
<td>EXAM 1</td>
<td></td>
</tr>
<tr>
<td>Sept 26</td>
<td>Wed</td>
<td>9:00-10:50</td>
<td>HPLC/UPLC</td>
<td>Basic Theory, Stationary Phases, Mobile Phases, Sample Matrix, Detector Types</td>
</tr>
<tr>
<td>Oct 1</td>
<td>Mon</td>
<td>9:00-9:50</td>
<td>LC-MS, LC-MSMS</td>
<td>Capabilities of MS vs. MSMS</td>
</tr>
<tr>
<td>Oct 3</td>
<td>Wed</td>
<td>9:00-10:50</td>
<td>GC-MS</td>
<td>Basic Theory, Differences vs. HPLC/UPLC, Analytes Amenable to GC-MS</td>
</tr>
<tr>
<td>Oct 8</td>
<td>Mon</td>
<td>9:00-9:50</td>
<td>Microscopy, Flow Cytometry, and FACS</td>
<td>Phase Contrast, Confocal, Principles of Fluorescence</td>
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<tr>
<td>Oct 10</td>
<td>Wed</td>
<td>9:00-10:50</td>
<td>Mammalian Cell and Tissue Culture Techniques: Primary and Secondary</td>
<td>Cell Growth, Cryopreservation, Use in Industry</td>
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<tr>
<td>Oct 11 to Oct 14</td>
<td></td>
<td></td>
<td>Fall Recess</td>
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<tr>
<td>Oct 15</td>
<td>Mon</td>
<td>9:00-9:50</td>
<td>Expression Systems: Mammalian Cells</td>
<td>Transfection Methods, Stable vs. Transient, Inducible vs. Constitutive Expression</td>
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<tr>
<td>Oct 17</td>
<td>Wed</td>
<td>9:00-10:50</td>
<td>Methods to Decrease or Block Gene Expression</td>
<td>SIRNA, Knockout Mice (conditional, non-conditional)</td>
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<tr>
<td>Oct 22</td>
<td>Mon</td>
<td>9:00-9:50</td>
<td>Gene Editing Technologies</td>
<td>CRISPR-Cas9</td>
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<tr>
<td>Oct 24</td>
<td>Wed</td>
<td>9:00-10:50</td>
<td>Drug Diffusion and Dissolution Assays</td>
<td>Diffusion Apparatuses/Chambers, Artificial and Natural Diffusion Barriers, FDA Requirements</td>
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<tr>
<td>Oct 29</td>
<td>Mon</td>
<td>9:00-9:50</td>
<td>EXAM 2</td>
<td></td>
</tr>
<tr>
<td>Oct 31</td>
<td>Wed</td>
<td>9:00-10:50</td>
<td>Drug Transport Assays and Plasma Membrane Receptor Assays</td>
<td>In Mammalian Cell Lines, In Isolated Tissue, FDA Guidance</td>
</tr>
<tr>
<td>Nov 5</td>
<td>Mon</td>
<td>9:00-9:50</td>
<td>Sensors in Toxicology: Synthetic Sensors and Biosensors</td>
<td></td>
</tr>
<tr>
<td>Nov 7</td>
<td>Wed</td>
<td>9:00-10:50</td>
<td>Techniques in Animals: In Vivo</td>
<td>Drug Administration, Fluid and Tissue Sampling, Animal Welfare</td>
</tr>
<tr>
<td>Nov 12</td>
<td>Mon</td>
<td>9:00-9:50</td>
<td>Techniques in Animals: Ex Vivo and In Vitro</td>
<td>Perfusion Apparatuses</td>
</tr>
<tr>
<td>Nov 14</td>
<td>Wed</td>
<td>9:00-10:50</td>
<td>In Vivo and In Vitro Toxicology and Pharmacokinetic Tests in Industry</td>
<td>LD50, TD50, Organ-Specific Tox. Tests, Metabolic Profiling</td>
</tr>
<tr>
<td>Nov 19</td>
<td>Mon</td>
<td>9:00-9:50</td>
<td>Tools in Bioinformatics</td>
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<tr>
<td>Nov 21 to</td>
<td></td>
<td></td>
<td>Thanksgiving Recess</td>
<td></td>
</tr>
<tr>
<td>Nov 25</td>
<td>Mon</td>
<td>9:00-9:50</td>
<td>Techniques in Immunology</td>
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<tr>
<td>Nov 26</td>
<td>Wed</td>
<td>9:00-10:50</td>
<td>Student Presentations</td>
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<tr>
<td>Nov 28</td>
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<tr>
<td>Dec 3</td>
<td>Mon</td>
<td>9:00-9:50</td>
<td>Student Presentations</td>
<td></td>
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<tr>
<td>Dec 5</td>
<td>Wed</td>
<td>9:00-10:50</td>
<td>EXAM 3</td>
<td></td>
</tr>
<tr>
<td>Dec 10</td>
<td>Mon (Fri Schedule)</td>
<td>no class</td>
<td></td>
<td></td>
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</tbody>
</table>
1. Course Title: Principle of Pharmacology and Medicinal Chemistry & Fundamentals of Drug Disposition

2. Course Number: PHS 579

   Coordinate with Registrar to insure course number is available

3. Course Credits: ___3___

   Classroom Hours ___3___  Lab Hours ______  Other ______

4. Course Pre-requisites: Enrolled in the MS program, or instructor permission

5. Course Co-requisites: None

6. Effective Date of Addition (semester/year) Fall 2019

7. Course Description (as proposed for the Bulletin):

   This course is an introductory course that will integrate pharmacology, medicinal chemistry, and pharmacokinetics fundamentals. This particular course will emphasize the most fundamental concepts central to drug therapy. A major emphasis will be placed on the interactions of drugs with their cellular targets in the human body, the chemical properties of drugs that dictate their biological activity, and the mechanisms that the body uses to determine the disposition of drugs. These concepts can be placed under the realms of pharmacology, medicinal chemistry, and pharmacokinetics.

8. Required Documentation:

Nesbitt School of Pharmacy at Wilkes University
Department of Pharmaceutical Sciences

PHS 579

Principles of Pharmacology and Medicinal Chemistry
&
Fundamentals of Drug Disposition

Instructors:

Dr. Ajay Bommareddy
Dr. Adam L. VanWert
Dr. Zbigniew Witczak
Wilkes University Curriculum Committee
PROPOSAL SUBMITTAL FORM

**Course Name:** Principles of Pharmacology and Medicinal Chemistry & Fundamentals of Drug Disposition

**Course Number:** PHS 579

**Course Credit:** 3

**Class Time:** M, T, R, F (1-2:50 pm) for 1 month, T, R (8-9:15 am) for 1 month

**Course Description:** This course is an introductory course that will integrate pharmacology, medicinal chemistry, and pharmacokinetics fundamentals. This particular course will emphasize the most fundamental concepts central to drug therapy. A major emphasis will be placed on the interactions of drugs with their cellular targets in the human body, the chemical properties of drugs that dictate their biological activity, and the mechanisms that the body uses to determine the disposition of drugs. These concepts can be placed under the realms of pharmacology, medicinal chemistry, and pharmacokinetics.

**Prerequisites:** Enrollment in the MS Pharmacology and Medicinal Chemistry Program or permission from the instructor

**Educational Outcomes for the Master’s Degree Program Pertinent to this Course**

**Goal 1: Develop foundational knowledge required in pharmacology and medicinal chemistry to support higher-level objectives.**

1.3. Discuss the disposition of drugs in humans, including factors affecting absorption, distribution, metabolism, and elimination.

1.4. Describe the structural and chemical properties of drug molecules pertinent to pharmacokinetics and pharmacodynamics.

1.5. Describe the location and function of organellar, cellular, tissue, and organismal macromolecules that are common drug targets

**Learning Objectives:** At the completion of this course, the student should be able to:

1. Relate the mechanism by which drugs interact with receptors and cellular signaling mechanisms to the biological and therapeutic responses they produce.

2. Describe the autonomic nervous system and all receptors pertinent to physiology and pharmacology.

3. Demonstrate an understanding of the relationship between molecular structure of a drug and its pharmacological activity.

4. Describe the routes and mechanisms of absorption, distribution, metabolism, and excretion within the human body.
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Instructor</th>
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<tbody>
<tr>
<td>8/27/18 (M)</td>
<td>Intro., Receptor Theory &amp; Signal Transduction</td>
<td>Dr. VanWert</td>
</tr>
<tr>
<td>8/28/18 (T)</td>
<td>Homeostasis &amp; Autonomic Nervous System (ANS)</td>
<td>Dr. Bommareddy</td>
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<tr>
<td>9/6/18 (R)</td>
<td>Dose Response Theory</td>
<td>Dr. VanWert</td>
</tr>
<tr>
<td>9/7/18 (F)</td>
<td>Medicinal Chemistry Principles</td>
<td>Dr. Witczak</td>
</tr>
<tr>
<td>9/10/18 (M)</td>
<td>Optional Attendance (Master’s students)</td>
<td>Dr. Witczak</td>
</tr>
<tr>
<td>9/13/18 (R)</td>
<td>Intro., Receptor Theory &amp; Signal Transduction; Homeostasis &amp; ANS; and Dose Response Theory</td>
<td>Drs. V and B</td>
</tr>
<tr>
<td>9/14/18 (F)</td>
<td>Medicinal Chemistry Principles</td>
<td>Dr. Witczak</td>
</tr>
<tr>
<td>9/17/18 (M)</td>
<td>Medicinal Chemistry Principles</td>
<td>Dr. Witczak</td>
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<tr>
<td>9/18/18 (T)</td>
<td>Absorption &amp; Distribution</td>
<td>Dr. Witczak</td>
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<tr>
<td>9/20/18 (R)</td>
<td>Metabolism</td>
<td>Dr. Witczak</td>
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<td>Metabolism</td>
<td>Dr. Witczak</td>
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<tr>
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<td>Metabolism &amp; Excretion</td>
<td>Dr. Witczak</td>
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<td>9/30/18 (R)</td>
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<td>8/31/18 (F)</td>
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<tr>
<td>9/4/18 (T)</td>
<td>Homeostasis &amp; Autonomic Nervous System</td>
<td>Dr. Bommareddy</td>
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<td>9/11/18 (T)</td>
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<td>9/20/18 (R)</td>
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</tbody>
</table>

**Exam I**
Intro., Receptor Theory & Signal Transduction; Homeostasis & ANS; and Dose Response Theory

**Exam II (separate from PHA 421)**
Medicinal Chemistry Principles and ADME

Dr. Witczak
Wilkes University Curriculum Committee
PROPOSAL SUBMITTAL FORM

Course Assessment:
Exams & Quizzes: Up to 20% of the course grade may be calculated based on performance in quizzes and/or other projects. The remaining percentage of the course is derived from exams.

Exam 1: 40 - 50%
Exam 2: 40 - 50%
Quizzes: 0 - 20%

Course Grade Scale:

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<td>&lt; 60</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Remediation: There are no remediation options for students who fail this course. A 2.0 or higher in this course is required to progress in the program.

Recommended Texts:

2. Please see Dr. Witczak for recommendations regarding medicinal chemistry texts.

Attendance Policy:
Class attendance is an important professional responsibility. There will be no makeup for missed exams, quizzes or other assignments due to unexcused absences. A grade of zero will be given. In the case of an unusual circumstance in which the absence is excusable, the student must contact Dr. VanWert at 408-4336 or Dr. Bommareddy at 408-4220 at least one-half hour before class. Make-up exams or assignments for these cases will be given at the discretion of the course instructors. Students are not permitted to record voice/video or take photos of instructors or lecture materials during class without their permission.

Examination Policy
Prior to the test, no student may enter the examination room. Upon entry into the examination room there will be no talking. All personal items (ie. book bags, electronic devices, etc.) must be kept at the front. Students should not wear hats with brims or watches. Students are not permitted to bring food or beverages to the exam. To ensure a fair and valid assessment of students’ skills and knowledge, students are not permitted to bring a reference, study materials, calculators or other electronic devices into the exam room unless prior permission was granted from the instructor. Other items that are strictly prohibited at your examination seat include cell
phones, computers/tablets, and any smart device including google glass and fitness trackers. Once you are at your assigned seat, you must remain seated. If you have a question, please raise your hand and the instructor will come to you. The examination paper should not be turned over until instructed to do so by the proctors. The student should check that the examination is complete and read all the instructions. After the first test is returned to the proctor, tardy students will not be allowed to enter the room and start the exam. That student will get a zero for the test. Upon exam completion, please do not congregate outside the classroom as this noise can be distracting to students still taking the exam. Students who do not turn in their exam promptly at the end of the exam session at the request of the proctor will receive a zero for that exam.

There will be no makeup of exams or quizzes for unexcused absences. A grade of zero will be given. In the case of an unusual circumstance in which the absence is excusable (for example, illness), the student must contact Dr. VanWert at least one-half hour before the exam. Students who are too ill to take an exam must see student health or their private physician for a written excuse. Make-up exams or assignments will be given at the discretion of the instructor(s) involved. Instructor(s) have the right to give a different make-up exam at their sole discretion.

During exam returns, students should remain in an area visible to the instructors. No electronic devices should be out during exam returns. Students are not permitted to make written notes regarding the exam. All exams must be returned to the course instructors in class on the day on which it is made available for review. Any violation of these policies will result in course failure. 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 for student review after this time period. For adjunct instructors and residents, all exam-related questions should be directed to course coordinators.

The School of Pharmacy has a technical standards document that can be found in your student handbook. The following is an excerpt regarding requesting accommodations. "Reasonable accommodations are services provided to individuals with disabilities that remove or lessen the effect of the disability-related barrier. Individuals without documented disabilities are not eligible for accommodations. Candidates with disabilities, in accordance with Wilkes University policy, and as defined by section 504 of 1973 Vocational Rehabilitation Act and the Americans with Disabilities Act of 1993, who may seek accommodations in order to meet the technical standards are encouraged to contact University College to discuss what reasonable accommodations, if any, the School of Pharmacy could make in order for the candidate to meet the standards. A student with a disability who requests accommodations will be required to submit this request in writing and provide pertinent supporting documentation in accordance with Wilkes University policies."

**Assignment Policy:**

1. Assignments are **due in the beginning of class** on the dates announced by the instructor. Assignments will **not** be accepted after the due date.
2. In-class assignments may be hand written, but must be submitted in a legible form. Illegible assignments will be returned.

**Academic Honesty:**
Professionalism: (adapted from Purkenson D. University of Washington)

As consistent with expectations of the scientific environment, professional behavior and attitudes are expected of all students enrolled in this course. Professionalism is demonstrated by a student who:

- uses appropriate use of verbal & non-verbal communication
- is punctual
- is reliable, dependable, accountable for one’s actions
- behaves in an ethical manner produces quality work,
- accepts constructive criticism and modifies behavior if necessary
- is cooperative – i.e. non-argumentative; willing and helpful
- is non-judgmental – student demonstrates an attitude of open-mindedness towards others and situations; does not “stereotype” others or prejudge situations
- communicates assertively – actively and appropriately engages in dialogue or discussion
- is self-directed in undertaking tasks, self-motivated
- is respectful – demonstrates regard for self, standardized patients, peers, faculty, staff and university property
- is empathetic – demonstrates appreciation of others’ positions; attempts to identify with other with others’ perspectives; demonstrates consideration towards others
- handles stress – remains calm, levelheaded, and composed in critical, stress or difficult situations
- is an active learner – seeks knowledge; asks questions, searches for information, takes responsibility for own learning
- is confident – acts & communicates in a self-assured manner, yet with modesty and humility
- follows through with responsibilities – if task is left incomplete or problem is not resolved, student seeks aid
- is diplomatic – is fair and tactful in all dealings with patients, peers, faculty and staff.
- is appropriately attired
- demonstrates a desire to exceed expectations – goes “above and beyond the call of duty”, attempts to exceed minimal standards and requirements for tasks/assignments/responsibilities
- utilizes time efficiently – allocates and utilizes appropriate amounts of time to fulfill responsibilities; utilizes others’ time wisely

Everyone has a right to be heard and should be able to express their constructive comments without ridicule. When expressing opinions etc. “I” phrases should be used. Lack of respect for other students, professors or staff as demonstrated by comments, tone of voice, disruptive behavior or absenteeism will not be tolerated. Additionally, there is to be no disruptive eating in the classroom.

Students who violate the professionalism policy can be dismissed from class. Re-entry into the class (including taking exams or quizzes) can only occur after the student writes an essay on professionalism and civility; the essay must be deemed acceptable by the
pharmacotherapeutics teaching team. All cell phones, pagers etc. are to be on silent mode during class or turned off! Cell phones and pagers are NOT to be answered during class time.

1. Course Title: Research

2. Course Number: PHS 578
   Coordinate with Registrar to insure course number is available
3. Course Credits: ___3___
   Classroom Hours_____ Lab Hours____9 Other_____

4. Course Pre-requisites: Enrolled in the MS program, or instructor permission

5. Course Co-requisites: None

6. Effective Date of Addition (semester/year) Fall 2019

7. Course Description (as proposed for the Bulletin):

   The Research course targets the developments of students’ research skills with these specific goals:

   **Goals:**
   *The overall learning goals of this course are to:*
   1. Provide research experience through participation in supervised research project prior to the thesis
   2. Involve students in doing research early in their master studies
   3. Increase students’ research skills.

8. Required Documentation:

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Nesbitt School of Pharmacy

Wilkes University
PHS 578
Research

Course Coordinator: Ka Lok Hong Pharm.D., Ph.D.
Course Title: Research
Course Number: PHS 578

Course Credits: 3

Class Time & Location: 9 hours of lab per week; Room: TBA (Spring Semester)

Course Description

The Research course targets the developments of students’ research skills with these specific goals:

Goals:
The overall learning goals of this course are to:
1. Provide research experience through participation in supervised research project prior to the thesis
2. Involve students in doing research early in their master studies
3. Increase students’ research skills.

Prerequisites: Enrolled in the MS Pharmacology and Medicinal Chemistry program or permission from the instructor

Course Outcomes:
Upon completion of the course, students should able to:
1. Describe the main research topic of each mentoring faculty member
2. Demonstrate basic techniques utilized by each mentoring faculty member

Educational Outcomes for the Master’s Degree Program Pertinent to the Course:

2.1 Demonstrate competency in executing experiments employing in vitro and in vivo models.
2.2 Demonstrate competency in determining DNA, RNA, and protein identity, quality, and quantity using accepted methodology.
2.3 Demonstrate competency in utilizing small-scale and multi-well format instruments to measure cell death, signaling, and homeostasis.
2.4 Demonstrate competency in using High-Performance or Ultra-High-Performance Liquid Chromatography to identify and quantify analytes of interest from biological and non-biological matrices.

Course Evaluation:

Pass/fail will be based upon the students’ ability to:
1. Perform laboratory techniques and protocols.
2. Prepare appropriate laboratory reagents.
3. Demonstrate knowledge of safe laboratory techniques.
4. Work professionally with the instructor and within a group.
5. Effectively communicate scientific concepts.
Wilkes University Curriculum Committee
PROPOSAL SUBMITTAL FORM

**Remediation Statement:**
****Students who fail this course will be required to meet with the Director(s) of the MS program and the corresponding thesis advisor to devise a mutually agreeable remediation plan.

**Attendance Policy:**

Class attendance is **mandatory.** Any unexcused absence will result in failure of the course. In circumstances where the absence is excusable the student must contact Dr. Hong at 570-408-4296 or kalok.hong@wilkes.edu at least one-half hour before class.

**Course Grade Scale:**

Pass/ Fail

** Final grade is strictly awarded at the discretion of the instructor

**Required Text:**

No required text book, required readings (e.g. journals) as indicated by the instructor.

**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.
Professionalism:
(adapted from Purkenson D., University of Washington)

As consistent with expectations of the practice environment, professional behavior and attitudes are expected for all students enrolled in professional courses. Professionalism is demonstrated by a student who:

- Uses appropriate use of verbal & non-verbal communication
- Is punctual
- Is reliable, dependable, and accountable for one’s actions
- Behaves in an ethical manner
- Produces quality work
- Accepts constructive criticism and modifies behavior if necessary
- Is cooperative – i.e. non-argumentative; willing and helpful
- Is non-judgmental – student demonstrates an attitude of open-mindedness towards others and situations; does not “stereotype” others or prejudge situations
- Communicates assertively – actively and appropriately engages in dialogue or discussion
- Is self-directed in undertaking tasks; self-motivated
- Is respectful – demonstrates regard for self, standardized patients, peers, faculty, staff, and university property
- Is empathetic – demonstrates appreciation of others’ positions; attempts to identify with others’ perspectives; demonstrates consideration towards others
- Handles stress – remains calm, levelheaded, and composed in critical, stress or difficult situations
- Is an active learner – seeks knowledge; asks questions, searches for information, takes responsibility for own learning
- Is confident – acts and communicates in a self-assured manner, yet with modesty and humility
- Follows through with responsibilities – if task is left incomplete or problem is not resolved, student seeks aid
- Is diplomatic – is fair and tactful in all dealings with patients, peers, faculty, and staff.
- Is appropriately attired
- Demonstrates a desire to exceed expectations – goes “above and beyond the call of duty,” attempts to exceed minimal standards and requirements for tasks/assignments/responsibilities
- Utilizes time efficiently – allocates and utilizes appropriate amounts of time to fulfill responsibilities; utilizes others’ time wisely

Lack of respect for other students, professors or staff as demonstrated by comments, tone of voice, or disruptive behavior will not be tolerated. Everyone has a right to be heard and should be able to express their constructive comments without ridicule. Students who violate the professionalism policy may be dismissed from class. Re-entry into the class can only occur after the student writes an essay on professionalism and civility; the essay must be deemed acceptable by the instructors. Depending on the specifics of the violation, other measures may be taken by the instructors, including but not limited to failure of the course.

All cell phones, pagers etc. are to be on silent mode during class or turned off. Cell phones and pagers are NOT to be answered during class time.
1. Course Title: Research Orientation

2. Course Number: PHS 581

   Coordinate with Registrar to insure course number is available

3. Course Credits: __1__

   Classroom Hours_____  Lab Hours____3_____  Other_____

4. Course Pre-requisites: Enrolled in the MS program, or instructor permission

5. Course Co-requisites: None

6. Effective Date of Addition (semester/year)  __Fall 2019__________

7. Course Description (as proposed for the Bulletin):

   This course orients students to pharmaceutical and pharmacological bench research. Students will spend up to 3 weeks at each participating faculty’s research group to gain exposure of the respective research topics.

8. Required Documentation:

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Nesbitt School of Pharmacy
Department of Pharmaceutical Sciences

PHS 581
Research Orientation

Course Coordinator: Ka Lok Hong Pharm.D., Ph.D.
Course Title: Research Orientation
Course Number: PHS 581

Course Credits: 1

Class Time & Location: 3 hours of lab per week; Room: TBA

Course Description
This course orients students to pharmaceutical and pharmacological bench research. Students will spend up to 3 weeks at each participating faculty’s research group to gain exposure of the respective research topics.

Goals:
The overall learning goals of this course are to:
1. Orient students with the research environment in the Department of Pharmaceutical Sciences
2. Provide students with laboratory safety guidance
3. Give students opportunity to make informed decision on potential primary thesis advisor

Prerequisites: Enrolled in the MS Pharmaceutical and Medicinal Chemistry program or permission from the instructor

Course Outcomes:
Upon completion of the course, students should able to:
1. Describe the main research topic of each mentoring faculty member
2. Demonstrate basic techniques utilized by each mentoring faculty member

Educational Outcomes for the Master’s Degree Program Pertinent to the Course:

2.1 Demonstrate competency in executing experiments employing in vitro and in vivo models.
2.2 Demonstrate competency in determining DNA, RNA, and protein identity, quality, and quantity using accepted methodology.
2.3 Demonstrate competency in utilizing small-scale and multi-well format instruments to measure cell death, signaling, and homeostasis.
2.4 Demonstrate competency in using High-Performance or Ultra-High-Performance Liquid Chromatography to identify and quantify analytes of interest from biological and non-biological matrices.

Course Evaluation:
Pass/fail will be based upon the students’ ability to:
1. Perform laboratory techniques and protocols.
2. Prepare appropriate laboratory reagents.
3. Demonstrate knowledge of safe laboratory techniques.
4. Work professionally with the instructor and within a group.
5. Effectively communicate scientific concepts.
6. Submission of a 1 to 2 pages reflection for each faculty laboratory orientation at the conclusion of the course.

**Remediation Statement:**
**Students who fail this course will be required to meet with the Director(s) of the MS program and the corresponding academic advisor to devise a mutually agreeable remediation plan.**

**Attendance Policy:**
Class attendance is mandatory. Any unexcused absence will result in failure of the course. In circumstances where the absence is excusable the student must contact Dr. Hong at 570-408-4296 or kalok.hong@wilkes.edu at least one-half hour before class.

**Course Grade Scale:**
Pass/ Fail

**Final grade is strictly awarded at the discretion of the instructor**

**Required Text:**
No required text book, required readings (e.g. journals) as indicated by the instructor.

**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.
Professionalism:
(adapted from Purkenson D., University of Washington)
As consistent with expectations of the practice environment, professional behavior and attitudes are expected for all students enrolled in professional courses. Professionalism is demonstrated by a student who:

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- Is reliable, dependable, and accountable for one’s actions
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- Produces quality work
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- Communicates assertively – actively and appropriately engages in dialogue or discussion
- Is self-directed in undertaking tasks; self-motivated
- Is respectful – demonstrates regard for self, standardized patients, peers, faculty, staff, and university property
- Is empathetic – demonstrates appreciation of others’ positions; attempts to identify with others’ perspectives; demonstrates consideration towards others
- Handles stress – remains calm, levelheaded, and composed in critical, stress or difficult situations
- Is an active learner – seeks knowledge; asks questions, searches for information, takes responsibility for own learning
- Is confident – acts and communicates in a self-assured manner, yet with modesty and humility
- Follows through with responsibilities – if task is left incomplete or problem is not resolved, student seeks aid
- Is diplomatic – is fair and tactful in all dealings with patients, peers, faculty, and staff.
- Is appropriately attired
- Demonstrates a desire to exceed expectations – goes “above and beyond the call of duty,” attempts to exceed minimal standards and requirements for tasks/assignments/responsibilities
- Utilizes time efficiently – allocates and utilizes appropriate amounts of time to fulfill responsibilities; utilizes others’ time wisely

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All cell phones, pagers etc. are to be on silent mode during class or turned off. Cell phones and pagers are NOT to be answered during class time.
## Tentative Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Week 1</td>
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<td>Safety Orientation</td>
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<td>Week 2</td>
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<td>Faculty #1</td>
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<td>Week 3</td>
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<td>Week 12</td>
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<td>Nov (Week 13)</td>
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<td>Thanksgiving Recess</td>
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<td>Week 14</td>
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<td>Faculty #4</td>
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<tr>
<td>Week 15</td>
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<td>Reflection and Wrap-up</td>
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</tbody>
</table>

Wilkes University Curriculum Committee
1. Course Title: Thesis Research I/II

2. Course Number: PHS 583 PHS 584

   Coordinate with Registrar to insure course number is available

3. Course Credits: 3

   Classroom Hours _____    Lab Hours 9    Other _____

4. Course Pre-requisites: Permission from Advisor and Director(s) of the MS program

5. Course Co-requisites: None

6. Effective Date of Addition (semester/year) Fall 2019

7. Course Description (as proposed for the Bulletin):

   All MS students are required to complete a thesis. The thesis should make an original
collection to knowledge in the field of Pharmaceutical and Pharmacological Sciences. There is
no predetermined length, but the most theses range between 70 to 100 pages (typed, doubled-
spaced, including figures and references)

8. Required Documentation:

Nesbitt School of Pharmacy
Department of Pharmaceutical Sciences

PHS 583 584
Thesis Research I/ II

Course Coordinator: Ka Lok Hong Pharm.D., Ph.D.
Course Title: Thesis Research
Course Number: PHS 583 584

Course Credits: 3

Class Time & Location: 9 hour per week; Room: TBA (Total of 2 semesters)

Course Description
All MS students are required to complete a thesis. The thesis should make an original contribution to knowledge in the field of Pharmaceutical and Pharmacological Sciences. There is no predetermined length, but the most theses range between 70 to 100 pages (typed, doubled-spaced, including figures and references).

Goals:
The overall learning goals of this course are to:
1. Provide students with opportunities to communicate and perform duty as a junior scientist

Prerequisites: Permission from the Thesis Advisor and Director(s) of the MS program

Course Outcomes:
Upon completion of the course, students should able to:
1. Identify and construct a problem/ thesis statement
2. Identify and utilize source materials and precedents
3. Carry out research an analyze data
4. Develop defensible conclusions
5. Make a persuasive argument

Educational Outcomes Pertinent to the Course:

2.1 Demonstrate competency in executing experiments employing in vitro and in vivo models.
2.2 Demonstrate competency in determining DNA, RNA, and protein identity, quality, and quantity using accepted methodology.
2.3 Demonstrate competency in utilizing small-scale and multi-well format instruments to measure cell death, signaling, and homeostasis.
2.4 Demonstrate competency in using High-Performance or Ultra-High-Performance Liquid Chromatography to identify and quantify analytes of interest from biological and non-biological matrices.

3.1 Demonstrate effective writing to express scientific background, hypotheses, research methods, and discoveries.
3.2 Demonstrate effective speaking to express scientific background, hypotheses, research methods, and discoveries.
3.3 Employ appropriate use of audio and visual tools when presenting scientific information to an audience.
3.4 Demonstrate professional verbal and nonverbal communication with scientists and non-scientists.

**Course Structure:**

**Thesis Committee**
Students are encouraged to identify their primary thesis advisor at the end of their Year 1 Fall semester and should be no later than the first 4 weeks of Year 1 Spring semester. Students are also required to form their thesis committee within first two weeks of their primary advisor selection. The thesis committee is comprised of the primary thesis advisor and two additional faculty members. At least one committee member should be form the School of Pharmacy faculty. One committee member from outside of the School of Pharmacy can be appointed to the committee, with the approval of the Graduate Program Director(s).

**Thesis Project**
Students are encouraged to discuss their thesis project soon after they have their primary thesis advisor.

**Thesis Proposal and Final Defense**
**Thesis proposal:** A NIH/NSF style research proposal/narrative is required and will be distributed to committee members two weeks prior to the oral presentation of the proposal. The oral proposal will be presented during Year 1 Spring Final Exams week.

**Written thesis:** A master thesis style write up of the work is distributed to committee members at least two weeks prior to the defense.

**Oral presentation and defense:** An oral presentation of the research is open to everyone, followed by a defense of the work for the thesis committee.

**Course Evaluation:**
Pass/fail will be based upon the students’ ability to:
1. Effectively communicate scientific concepts.
2. Successful passing of each mile stones

**Remediation Statement:**
**Students who fail this course will be required to meet with the Director(s) of the MS program and the corresponding thesis advisor to devise a mutually agreeable remediation plan.

**Attendance Policy:**
As arranged with primary thesis advisor

**Course Grade Scale:**
Pass/ Fail
** Final grade is strictly awarded at the discretion of the thesis committee

**Required Text:**

No required text book, required readings (e.g. journals) as indicated by the primary thesis advisor.

**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.
Professionalism:
(adapted from Purkenson D., University of Washington)
As consistent with expectations of the practice environment, professional behavior and attitudes are expected for all students enrolled in professional courses. Professionalism is demonstrated by a student who:
• Uses appropriate use of verbal & non-verbal communication
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• Is cooperative – i.e. non-argumentative; willing and helpful
• Is non-judgmental – student demonstrates an attitude of open-mindedness towards others and situations; does not “stereotype” others or prejudge situations
• Communicates assertively – actively and appropriately engages in dialogue or discussion
• Is self-directed in undertaking tasks; self-motivated
• Is respectful – demonstrates regard for self, standardized patients, peers, faculty, staff, and university property
• Is empathetic – demonstrates appreciation of others’ positions; attempts to identify with others’ perspectives; demonstrates consideration towards others
• Handles stress – remains calm, levelheaded, and composed in critical, stress or difficult situations
• Is an active learner – seeks knowledge; asks questions, searches for information, takes responsibility for own learning
• Is confident – acts and communicates in a self-assured manner, yet with modesty and humility
• Follows through with responsibilities – if task is left incomplete or problem is not resolved, student seeks aid
• Is diplomatic – is fair and tactful in all dealings with patients, peers, faculty, and staff.
• Is appropriately attired
• Demonstrates a desire to exceed expectations – goes “above and beyond the call of duty,” attempts to exceed minimal standards and requirements for tasks/assignments/responsibilities
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Revised 4/17/2018