Proposal Form For Addition And Revision Of Courses

1. Proposing College / School: Harrison School of Pharmacy
   Department: Pharmacal Sciences

2. Course Prefix and Number: PYPS 5800/6800
   3. Effective Term: Summer 201

4. Course Title: Survey of Multi-modality Molecular Imaging
   Abbreviated Title (30 characters or less): Molecular Imaging

5. Requested Action:
   - □ Renumber a Course
   - □ Add a Course
   - □ Revise a Course
   Current Course Number: [Blank]
   Proposed Course Number: [Blank]
   Type of Revision: [Blank]

6. Course Credit:
   Contact/Group Hours
   Maximum Hours (Repeatability): 2
   Scheduled Type
   (e.g.: Lab, Lecture, Practicum, Directed Study)
   2  Lecture
   Weekly or Per Term? 2 20
   Credit Hours
   Anticipated Enrollment
   Total Credit Hours: 2

7. Grading Type:
   - □ Regular (ABCDF)
   - □ Satisfactory/Unsatisfactory (S/U)
   - □ Audit

8. Prerequisites/Corequisites:
   Use "P:" to indicate a prerequisite, "C:" to indicate a corequisite, and "P/C:" to indicate a prerequisite with concurrency.
   Permission of Instructor

9. Restrictions: List specific restriction in space above.
   - □ College
   - □ Major
   - □ Standing
   - □ Degree

10. Course Description:
    (20 Words or Less, exactly as it should appear in the Bulletin)
    State-of-the-art survey of molecular imaging techniques that are available and their use to monitor the progression of various human diseases

11. May Count Either:
    □ or □ (Indicate if this particular course cannot be counted for credit in addition to another)

12. Affected Program(s):
    (Respond "N/A" if not included in any program; attach memorandum if more space is required)
    Program Type: n/a
    Program Title: n/a
    Requirement or Elective?
    (required or optional?)

13. Overlapping or Duplication of Other Units' Offerings:
    (If course is included in any other degree program, is used as an elective frequently by other unit(s), or is in an area similar to that covered by another college/school, attach correspondence with relevant unit)
    □ Applicable
    □ Not Applicable
14. Justification: Auburn University currently has no current course like this and it addresses an important area of interest to current biological sciences and the understanding of this science, especially for graduate students and senior undergraduate.

Include a concise, yet adequate rationale for the addition/revision of the course, citing accreditation, assessments (faculty, graduate, and/or external) where applicable.

15. Resources: The School of Pharmacy and Department have sufficient resources to offer the course and that no additional resources are needed. The Department have faculty with expertise in this field to direct the education described in the course content.

Indicate whether existing resources such as library materials, classroom/laboratory space, and faculty appointments are adequate to support the proposed addition/revision; if additional resources are required, indicate how such needs will be met, referencing the appropriate level of authorization -- i.e.: Dean -- where necessary; if no additional resources or shifting of resources will be necessary, respond "Not Applicable."

16. Student Learning Outcomes: Objectives: The students upon completion of the course will be able to identify when it is appropriate to utilize a particular imaging modality. Furthermore, the students will be able to describe both the positives and negatives attributes of the different modalities, namely fluorescence molecular tomography, fluorescence reflectance imaging, confocal microscopy, light microscopy, X-ray spectroscopy, Magnetic Resonance Imaging, Computed Tomography and Ultrasound Imaging.

State in measurable terms (reflective of course level) what students should be able to do when they have completed this course.

17. Course Content Outline: Week 1 - Review Syllabus/Class Goals and Introduction to Molecular Imaging
Week 2 - Basic of Antibodies, production, and their use of tools in imaging studies
Week 3 - Flow cytometry and FACS
Week 4 - Optical Imaging and Its Clinical Applications
Week 5 - Exam 1
Week 6 - MRI basics and Tour of MRI facilities
Week 7 - Cardiovascular MRI
Week 8 - Bioluminescent Reporters, Tour of IVIS Lumina XR II system
Week 9 - Basic Microscopy I
Week 10 - Basic Microscopy II
Week 11 - Exam 2
Week 12 - From tissue to data (Tissue Processing, Confocal Basics difference versus fluorescence microscopy, Two-photon imaging, Advance Microscopy techniques (FRET, Calcium eflux)
Week 13 - Basic TEM and SEM techniques (including negative staining, rotary shadowing and sputter coating), Tour of Confocal and TEM facility in COSAM
Week 14 - Student Presentations on Approved Journal Topics
Week 15 - Student Presentation on Approved Journal Topics
Final Exam

Course workload will be divided among Harrison School of Pharmacy, the School of Engineering and College of Science and Math.

Course Materials: PDF of notes will be placed on CANVAS when available for student download only if the Lecturer agrees that this is appropriate.


Provide a comprehensive, week-by-week breakdown of course content, including assignment due dates.

18. Assignments / Projects: Undergraduate Grading: Midterm 1 (22%), Midterm 2 (22%), Student
Graduate Grading: Midterm 1 (20%), Midterm 2 (20%), Student Presentation (20%), Final Exam (20%), Review Paper (14%) and Attendance (6%).

Three exams will be given in class and will assess the students' understanding of the material covered in the preceding lectures of course material. The final exam will be 50% cumulative with questions covering concepts already addressed in the two previous exams. There will be student presentation that will occur at the end of the semester on a topic that will be approved by the instructor a month prior to these presentations. Attendance by signed roll sheets exactly 6 times during the course of the semester. Students will be allowed to drop on absence with 5 student signed rolls = 100% attendance. 4 student signed roll = 50% attendance, and so on.

Graduate students will provide an original essay or review article that they have written describing the importance of the imaging modality or technique they have chosen as their subject for the student presentation. The papers will be a maximum of 4 page single spaced using 12 pt Times New Roman font.

(List all quizzes, projects, reports, activities and other components of the course grade -- including a brief description of each assignment that clarifies its contribution to the course's learning objectives)

19. Rubric and Grading Scale:

The conversion of percentage to grades will be as follows, 90-100 percent is an A, 80-89 percent is a B, 70-79 percent is a C, 60-69 percent is a D, and anything below 60 percent is considered failing.

The student presentations will be grade on the following rubric. The assessment will cover the following: 1) Presentation of Pertinent Data (15% Final Grade) (F.G.), 2) Critical Thinking Skills (25% F.G.), 3) Communication Skills (15%), 4) Response to Questions / Knowledge of Subject (25%), 5) Printed and Audiovisual Materials (10%), and 6) Student is interactive with the audience during the presentation (10%). The instructor will score the presentation form the following scale for each assessment point: (0 pts) The task was not completed, (1 pts) The task was completed but the student required significant instructor intervention during the assessment task, (2 pts) The task was preformed with minimal intervention by the instructor and to a basic level, (3 pts) Competent, and (4 pts) Exceeds Expectations: the student show a proficiency at the task during the presentation. The score will be multiplied by the percentage worth of the assessment topic and summed and converted to a percentage overall score.

Graduate students original essay or review article will be graded on background presentation (20%), descriptions as to the appropriate studies that would utilize this technique (20%), description of the limitations of the modality or procedure (20%), and summary and future directions of this technique and/or procedure (20%) and references (20%). Plagiarism or incidental copying of text without proper acknowledgement will trigger review by the Honors Council and a total of 0% given for the paper.

(List all components of the course grade -- including attendance and/or participation if relevant -- with point totals for each; indicate point totals and ranges or percentages for grading scale; for S/U grading, detail performance expectations for a passing grade)

20. Justification for Graduate Credit:

Listing of this course for graduate school credit is appropriate because graduate students will be required to complete a rigorous review describing an imaging modality or an imaging procedure in detail. Furthermore, the course will be a in depth survey of the state-of-art techniques that are available to scientists and how these modalities can be use to address complex clinical and scientific problems of pathogeneises and therapeutic response to
There will be significant background given on each imaging modality and instructors will be also addressing the limitations of each modality.

(Included below are standard statements regarding course policies. If necessary, a statement may be altered to reflect the academic policies of individual faculty members and/or the academic unit or department, provided that there is no conflict with the Student Policy Handbook, Faculty Handbook, or any existing university policy.)

**Policy Statements**

**Attendance:** Although attendance is not required, students are expected to attend all classes, and will be held responsible for any content covered in the event of an absence.

**Excused Absences:** Students are granted excused absences from class for the following reasons: illness of the student or serious illness of a member of the student's immediate family, death of a member of the student’s immediate family, trips for student organizations sponsored by an academic unit, trips for university events, trips for participation in intercollegiate athletic events, subpoena for a court appearance, and religious holidays. Students who wish to have an excused absence from class for any other reason must contact the instructor in advance of the absence to request permission. The instructor will weigh the merits of the request, and render a decision. When feasible, the student must notify the instructor prior to the occurrence of any excused absences, but in no case shall such notification occur more than one week after the absence. Appropriate documentation for all excused absences is required. Please consult the Student Policy Handbook for more information on excused absences.

**Make-Up Policy:** Arrangement to make up a missed major examination (e.g., hour exams, mid-term exams) due to properly authorized excused absences must be initiated by the student within one week of the end of the period of the excused absence(s). Except in unusual circumstances, such as the continued absence of the student prior to the advent of university holidays, a make-up exam will take place within two weeks of the date that the student initiates arrangements for it. Except in extraordinary circumstances, no make-up exams will be arranged during the last three days before the final exam period begins.

**Academic Honesty Policy:** All portions of the Auburn University student academic honesty code (Title XII) found in the Student Policy Handbook will apply to university courses. All academic honesty violations or alleged violations of the SGA Code of Laws will be reported to the Office of the Provost, which will then refer the case to the Academic Honesty Committee.

**Disability Accommodations:** Students who need accommodations are asked to electronically submit their approved accommodations through AU Access and then arrange a meeting during office hours the first week of classes, or as soon as possible if accommodations are needed immediately. If you have a conflict with my office hours, an alternate time can be arranged. To set up this meeting, please contact me by e-mail. If you have not established accommodations through the Office of Accessibility, but need accommodations, make an appointment with the Office of Accessibility, 1228 Haley Center, 844-2096 (V/TT).
Approvals

Department Chair / Head

College / School Curriculum Committee

College / School Dean

Dean of the Graduate School (for Graduate Courses)

Assoc. Provost for Undergraduate Studies (for Undergraduate Courses)

12.04.2012

2012-12-07

12/18/12

Contact Person: 

Telephone: 

E-Mail Address: 

Fax: 
Course Number: PYPS 5800/6800  
Course Title: Survey of Multi-modality Molecular Imaging  
Credit Hours (2) LEC.2  
Prerequisites: Instructor Approval

Resource Materials:  

Course Description:  
State-of-the-art survey of molecular imaging techniques that are available and their use to monitor the progression of various human diseases.

Course Objectives:  
Objectives: The students upon completion of the course will be able to identify when it is appropriate to utilize a particular imaging modality. Furthermore, the students will be able to describe both the positives and negatives attributes of the different modalities, namely fluorescence molecular tomography, fluorescence reflectance imaging, confocal microscopy, light microscopy, X-ray spectroscopy, Magnetic Resonance Imaging, Computed Tomography and Ultrasound Imaging.

Course Content:  
Week 1 - Review Syllabus/Class Goals and Introduction to Molecular Imaging  
Week 2 - Basic of Antibodies, production, and their use in tools in imaging studies  
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Week 4 - Optical Imaging and Its Clinical Applications  
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Week 6 - MRI basics and Tour of MRI facilities  
Week 7 - Cardiovascular MRI  
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Week 9 - Basic Microscopy I  
Week 10 - Basic Microscopy II  
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Week 12 - From tissue to data (Tissue Processing, Confocal Basics difference verses fluorescence microscopy, Two-photon imaging, Advance Microscopy techniques (FRET, Calcium eflux)  
Week 13 - Basic TEM and SEM techniques (including negative staining, rotary shadowing and sputter coating); Tour of Confocal and TEM facility in COSAM  
Week 14 - Student Presentations on Approved Journal Topics  
Week 15 - Student Presentation on Approved Journal Topics  
Final Exam

Course Requirements/Evaluation:  
Undergraduate Grading: Midterm 1 (22%), Midterm 2 (22%), Student Presentation (25%), Final Exam (25%), Attendance (6%).

Graduate Grading: Midterm 1 (20%), Midterm 2 (20%), Student Presentation (20%), Final Exam (20%), Review Paper (14%) and Attendance (6%).

Three exams will be given in class and will assess the students understanding of the material covered in the preceding lectures of course material. The final exam will be 50% cumulative with questions covering concepts already addressed in the two previous exams. There will be student presentation that will occur at the end of the semester on a topic that will be approved by the instructor a month prior to these presentations.

Graduate students will provide an original essay or review article that they have written describing the importance of the imaging modality or technique they have chosen as their subject for the student presentation. The papers will be a maximum of 4 page single spaced using 12 pt Times New Roman font.

Grading Scale: A: 100-90%  B: 80-89.9%  C: 70-79.9%  D: 60-69.9%  F: <60%
Course Policy Statements:

Class Attendance: Regular class attendance and active participation in class discussion are required for the course. Attendance will be taken by signed roll sheets exactly 6 times during the course of the semester. Students will be allowed to drop an absence with 5 student signed rolls = 100% attendance, 4 student signed roll = 80% attendance, and so on.

Excused Absence: Students are granted excused absences from class for the following reasons: Illness of the student or serious illness of a member of the student’s immediate family, the death of a member of the student’s immediate family, trips for student organizations sponsored by an academic unit, trips for University classes, trips for participation in intercollegiate athletic events, subpoena for a court appearance, and religious holidays. Students who wish to have an excused absence from this class for any other reason must contact the instructor in advance of the absence to request permission. The instructor will weigh the merits of the request and render a decision. When feasible, the student must notify the instructor prior to the occurrence of any excused absence, but in no case shall such notification occur more than one week after the absence. Appropriate documentation for all excused absences is required. Please see the Student Policy eHandbook for more information on excused absences.

Make-up Policy: Arrangement to make up a missed major examination (e.g. hour exams, mid terms exams) due to properly authorized excused absences must be initiated by the student within one week from the end of the period of the excused absence(s). Except in unusual circumstances, such as continued absence of the student or the advent of University holidays, a make-up exam will take place within two weeks from the time that the student initiates arrangements for it. Except in extraordinary circumstances, no make-up exams will be arranged during the last three days before the final exam period begins.

Academic Honesty Policy: All portions of the Auburn University student academic honesty code (title XII) found in the Student Policy eHandbook will apply to the class. All academic honesty violations or alleged violations of the SGA Code of Laws will be reported to the Office of the Provost, which will then refer the case to the Academic Honesty Committee.

Disability Accomodations: Students who need special accommodations in class, as provided for by the Americans With Disabilities Act, should arrange a confidential meeting with the instructor during office hours the first week of classes – or as soon as possible if accommodations are needed immediately. You must bring a copy of your Accommodation Memo and an Instructor Verification Form to the meeting. If you do not have these forms, but need accommodations, make an appointment with The Program for Students with Disabilities, 1228 Haley Center, 844-2096.

Justification for Graduate Credit: Listing of this course for graduate school credit is appropriate because graduate students will be required to complete a rigorous review describing an imaging modality or an imaging procedure in detail. Furthermore, the course will be a in depth survey of the state-of-art techniques that are available to scientists and how these modalities can be used to address complex clinical and scientific problems of pathogenesis and therapeutic response to disease. There will significant background given on each imaging modality and instructors will be also addressing the limitations of each modality.

Mail and DropBox: Students are required to provide the address to an active email account and are required to read and respond to course-related email messages. A student’s email address will be used to provide the student with access to a designated DropBox folder. This DropBox folder will be used to distribute documents associated with course syllabi, lecture handouts, and other course materials. It will also be used to submit course assignments to the instructor.

Campus Emergencies: In the event of a major campus emergency, the requirements, deadlines, and grading policies of this course are subject to changes that may be necessitated by a revised semester calendar. Students will notified by email about any such changes in this course. Students are also welcome to contact the instructor via email or telephone.

Faculty Contact:
Peter Panizzi, Ph.D.
Assistant Professor
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Harrison School of Pharmacy
Auburn University
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Auburn, AL 36849-5501