New Course Request

Indiana University

Indianapolis Campus

Check Appropriate Boxes:

- Undergraduate credit [ ]
- Graduate credit [X]
- Professional credit [ ]

1. School/Division: Medicine/Graduate
2. Academic Subject Code: GRAD
3. Course Number: C725 (must be cleared with University Enrollment Services)
4. Instructor: N. Morral, PhD
5. Course Title: Gene Transfer Approaches to Clinical and Basic Research (Gene Therapy)

Recommended Abbreviation (Optional)

6. First time this course is to be offered (Semester/Year): Spring 2008
7. Credit Hours: Fixed at 1 or Variable from ___ to ___
8. Is this course to be graded S-F (only)? Yes [ ] No [X]
9. Is variable title approval being requested? Yes [ ] No [X]

10. Course description (not to exceed 50 words) for Bulletin publication:
A lecture-based course of basic principles involved with the transfer and expression of genetic material. Focus on technical aspects of each vector system, followed by applications to human diseases/experimental animal models. Practical understanding of non-viral and viral gene transfer to utilize these techniques in research studies.

11. Lecture Contact Hours: Fixed at 15 or Variable from ___ to ___
12. Non-Lecture Contact Hours: Fixed at 0 or Variable from ___ to ___
13. Estimated enrollment: 5 of which 100 percent are expected to be graduate students.
14. Frequency of scheduling: Annually
15. Justification for new course: Elective module in new open admissions PhD curriculum
16. Are the necessary reading materials currently available in the appropriate library? Yes
17. Please append a complete outline of the proposed course, and indicate instructor (if known), textbooks, and other materials.
18. If this course overlaps with existing courses, please explain with which courses it overlaps and whether this overlap is necessary, desirable, or unimportant.
19. A copy of every new course proposal must be submitted to departments, schools, or divisions in which there may be overlap of the new course with existing courses or areas of strong concern, with instructions that they send comments directly to the originating Curriculum Committee. Please append a list of departments, schools, or divisions thus consulted.

Submitted by:

[Signature]
Department Chairman/Division Director

Date: 5/14/07

Dean of Graduate School (when required)

[Signature]
Date

Approved by:

[Signature]
Dean

Date: 5/14/07

Chancellor/Vice-President

Date

University Enrollment Services

Date

After School/Division approval, forward the last copy (without attachments) to University Enrollment Services for initial processing, and the remaining four copies and attachments to the Campus Chancellor or Vice-President.

UPS 724

University Enrollment Services Final—White; Chancellor/Vice-President—Blue; School/Division—Yellow; Department/Division—Pink; University Enrollment Services Advance—White
New Course Request

I. Title: GENE TRANSFER APPROACHES TO CLINICAL AND BASIC RESEARCH (gene Therapy)

   Course number: G725
   Instructors: Nuria Morral (course director), Ken Cornetta, Wade Clapp, Mary Dinauer, Daniela Bischof, Chinghai Kao, Brenda Grimes, Mark Payne
   Prerequisites: students taking the course should have basic notions of virology and genetics (e.g. G716 Biomedical Science II- Molecular Biology and Genetics).

II. COURSE DESCRIPTION AND RATIONALE

   The gene therapy course introduces students to the basic principles involved with the transfer and expression of genetic material. There is a focus on technical aspects of each vector system, followed by applications to human diseases/experimental animal models. At the conclusion of the course, the student has gained a practical understanding of non-viral and viral gene transfer and is in an excellent position to begin to utilize these techniques in his/her research studies. This is a lecture-based course.

III. EDUCATIONAL OBJECTIVES

   • Describe the current tools to introduce genes into cells
   • Advantages and limitations of each vector system
   • Be able to discuss which gene transfer system to use to treat a human disease
   • Be familiar with the most important advances in the field as well as the main challenges
   • Be able to discuss applications of gene transfer in basic research
   • Be familiar with the steps involved in the production of each vector system

IV. COURSE CONTENT:

<table>
<thead>
<tr>
<th>WEEK</th>
<th>LECTURE</th>
<th>INSTRUCTOR</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Gene expression regulation</td>
<td>Nuria Morral</td>
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<td></td>
<td>Integrating vectors (retroviral): description, production and</td>
<td>Ken Cornetta</td>
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<td></td>
<td>titration methods, limitations. Random integration in the genome</td>
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<td></td>
<td>and applications to basic research</td>
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<td></td>
<td>Integrating vectors (lentiviral). Ethical and regulatory issues</td>
<td></td>
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<tr>
<td>2</td>
<td>Genetically engineered transgenic animal models</td>
<td>Wade Clapp</td>
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<td></td>
<td>Clinical studies using retroviral vectors: lessons learned from the</td>
<td>Mary Dinauer</td>
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<td>first ADA human trial to the first success of gene therapy in SCID</td>
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<tr>
<td></td>
<td>patients</td>
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<td></td>
<td>AAV vectors: description, production, integration in human chromosome</td>
<td>Daniela Bischof</td>
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<td></td>
<td>19 (wild type vs vectors).</td>
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<td>3</td>
<td>AAV vectors: clinical studies. Gene transfer to the eye; gene therapy</td>
<td>Chinghai Kao</td>
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<td>for haemophilia</td>
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<td></td>
<td>Adenoviral vectors: description of vector types, production,</td>
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<td></td>
<td>applications and limitations. Immunogenicity</td>
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<td></td>
<td>Cancer gene therapy using adenoviral vectors: oncolytic vectors and</td>
<td></td>
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<tr>
<td></td>
<td>immunotherapy</td>
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<td>4</td>
<td>Gene transfer to the liver: cardiovascular diseases; adenoviral vectors to study gene function</td>
<td>Nuria Morral</td>
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<td>5</td>
<td>Artificial chromosomes: current status</td>
<td>Brenda Grimes</td>
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<tr>
<td>6</td>
<td>Non-viral vectors: description, production methods, applications to treat human diseases, successes. Transduction efficiency</td>
<td>Mark Payne</td>
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<td>7</td>
<td>Student paper presentation</td>
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<td>EXAM</td>
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V. REQUIRED AND RECOMMENDED TEXTS:

VI. EVALUATION AND GRADING:
Student grades in the course will be determined by one exam consisting of multiple short answer questions. The exam contributes 90% of the final grade; 10% of the grade is from presentation/discussion of a paper to the rest of the classmates. Objectives covered in the lectures will be the source of all examination questions.

Grading Scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Minimum %</th>
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<tbody>
<tr>
<td>A+</td>
<td>100.0</td>
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<tr>
<td>A</td>
<td>95.0</td>
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<tr>
<td>A-</td>
<td>90.0</td>
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<tr>
<td>B+</td>
<td>87.0</td>
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<tr>
<td>B</td>
<td>83.0</td>
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<tr>
<td>B-</td>
<td>80.0</td>
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<tr>
<td>C+</td>
<td>77.0</td>
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<tr>
<td>C</td>
<td>73.0</td>
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<tr>
<td>C-</td>
<td>70.0</td>
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<tr>
<td>D+</td>
<td>67.0</td>
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<tr>
<td>D</td>
<td>63.0</td>
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<tr>
<td>D-</td>
<td>60.0</td>
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<td>F</td>
<td>0.0</td>
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Note that grades of C and lower are not passing grades in graduate level courses.

VII. BIBLIOGRAPHY:
Representative sample of the selected readings related to the course:


VIII. CHEATING AND PLAGIARISM:
Students are instructed to make themselves aware of University regulations concerning plagiarism, the maintenance of academic honesty and the definitions of unacceptable behavior and cheating. Academic misconduct of any sort will not be tolerated and will be dealt with as outlined in the IU/IUPUI Code of Student Rights, Responsibilities, and Conduct, which can be viewed at:

http://www.life.iupui.edu/help/docs/Part_3all.html

Examples of misconduct include but are not limited to:

1. Cheating
   A student must not use or attempt to use unauthorized assistance, materials, information, or study aids in any academic exercise

2. Fabrication
A student must not falsify or invent any information or data in an academic exercise including, but not limited to, records or reports, laboratory results, and citations to the sources of information.

3. Plagiarism
A student must not adopt or reproduce ideas, words, or statements of another person without appropriate acknowledgment. A student must give credit to the originality of others and acknowledge an indebtedness whenever he or she does any of the following:
   a. Quotes another person's actual words, either oral or written
   b. Paraphrases another person's words, either oral or written
   c. Uses another person's idea, opinion, or theory; or
   d. Borrows facts, statistics, or other illustrative material, unless the information is common knowledge.

4. Interference
   a. A student must not steal, change, destroy, or impede another student's work.
   b. A student must not give or offer a bribe, promise favors, or make threats with the intention of affecting a grade or the evaluation of academic performance.

Potential consequences for academic misconduct:

If the instructor has information that one of his/her students committed an act of academic misconduct, the faculty member will hold an informal conference with the student. The conference will be prompt and private. If the faculty member concludes that the student is responsible for the misconduct, then the faculty member will impose an appropriate academic sanction (i.e., lower or failing grade on the assignment, assessing a lower or failing grade for the course).

IX. AMERICANS WITH DISABILITIES ACT:
If you need any special accommodations due to a disability, please contact Adaptive Educational Services at (317)-274-3241. The office is located in CA 001E.
Letter from Dr. N. Douglas Lees (Chair of Biology, IUPUI)

From: Lees, Norman D  
Sent: Friday, May 04, 2007 12:30 PM  
To: Rhodes, Simon J  
Subject: Re: biomedical science courses

Simon,

I see no conflicts among the new and revised courses you have listed and existing courses in Biology.

Doug

Dear Doug and Frank,

Please find attached a Word file that outlines some proposed graduate level courses in biomedical sciences. Please note that some are not new course requests but will be requests to change existing courses (or courses not often taught but that have approved numbers) - I have included both types and noted the situation in the file. These are short, modular (mostly 1 credit, some 2 credit) courses that will be part of a first year, spring semester modular series that incoming IUSM PhD students will chose from as we switch to a common entry system for our PhD programs. I expect that the enrollment will be varied depending on the area - some will be very small and taught in a more informal tutorial style. In addition to our PhD students, there will perhaps be a few prospective students that might be "sampling" the curriculum. All of the classes will be open to any IUPUI graduate student with the appropriate prereqs that wants to take them. I do not think that the courses conflict with your course offerings.

I would like to submit course requests to the IUPUI graduate committee (GAC) as soon as possible. This committee typically wants to know that proposed new courses will not conflict with existing campus course offerings. I am therefore writing to ask if you would review the course outlines and please let me know if you agree.

A reply by e-mail would be fine.
Please let me know if you have any questions.
There will be a few more but this is the bulk of it. I will send the others to you soon.
Thanks very much,

Simon

******************************************************************************
Simon J. Rhodes, Ph.D.
Associate Dean for Graduate Studies
Indiana University School of Medicine
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Attachment converted: Macintosh HD:SPRING COURSE drafts.doc (WDBN/«IC») (0042A42E)
Letter from Dr. Franklin Schultz (Chair of Chemistry and Chemical Biology, IUPUI)

From: schultz@chem.iupui.edu
Sent: Monday, May 07, 2007 3:21 PM
To: Rhodes, Simon J
Subject: Re: biomedical science courses

Simon

There are no conflicts with existing courses in the Department of Chemistry and Chemical Biology.

With best regards,

Frank
Franklin A. Schultz
Professor and Chair
Department of Chemistry and Chemical Biology
Indiana University Purdue University Indianapolis
402 North Blackford Street, LD 326
Indianapolis, IN 46202
Phone: 317-274-6875; Fax: 317-274-4701
chair@chem.iupui.edu

On Wednesday, May 2, 2007, at 07:37 PM, Rhodes, Simon J wrote:

Dear Doug and Frank,

Please find attached a Word file that outlines some proposed graduate level courses in biomedical sciences. Please note that some are not new course requests but will be requests to change existing courses (or courses not often taught but that have approved numbers) - I have included both types and noted the situation in the file. These are short, modular (mostly 1 credit, some 2 credit) courses that will be part of a first year, spring semester modular series that incoming IUSM PhD students will chose from as we switch to a common entry system for our PhD programs.. I expect that the enrollment will be varied depending on the area – some will be very small and taught in a more informal tutorial style. In addition to our PhD students, there will perhaps be a few prospective students that might be "sampling" the curriculum. All of the classes will be open to any IUPUI graduate student with the appropriate prereqs that wants to take them. I do not think that the courses conflict with your course offerings.

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There will be a few more but this is the bulk of it. I will send the others to you soon.
Thanks very much,

Simon
Simon J. Rhodes, Ph.D.
Associate Dean for Graduate Studies
Indiana University School of Medicine

<SPRING COURSE drafts.doc>