Graduate Council Doc. No. 11-32a

Office of the Registrar
FORM 40G REV. 10/10

PURDUE UNIVERSITY

REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF A GRADUATE COURSE
(50000-60000 LEVEL)

Print Form

EFD - 02-12 - (201310)

DEPARTMENT Biomedical Engineering EFFECTIVE SESSION Fall 2012

INSTRUCTIONS: Please check the items below which describe the purpose of this request.

- [x] 1. New course with supporting documents (complete proposal form)
- [ ] 2. Add existing course offered at another campus
- [ ] 3. Expiration of a course
- [ ] 4. Change in course number
- [ ] 5. Change in course title
- [ ] 6. Change in course credit/type
- [ ] 7. Change in course attributes
- [ ] 8. Change in instructional hours
- [ ] 9. Change in course description
- [ ] 10. Change in course requisites
- [ ] 11. Change in semesters offered
- [ ] 12. Transfer from one department to another

PROPOSED:		EXISTING:	
Subject Abbreviation	BME	Subject Abbreviation	
Course Number	62600	Course Number	
Long Title	Engineering Nanomedical Systems		
Short Title			

Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)

TERMS OFFERED
Check All That Apply:
[x] Fall [ ] Spring [ ] Summer

CAMPUS(ES) INVOLVED
[ ] Calumet [ ] N. Central
[ ] Cont Ed [ ] Tech Statewide
[ ] Ft. Wayne [x] W. Lafayette
[ ] Indianapolis

CREDIT TYPE
1. Fixed Credit: Cr. Hrs. 3
2. Variable Credit Range: Minimum Cr. Hrs
(Check One) To [ ] Or [ ]
Maximum Cr. Hrs.
3. Equivalent Credit: Yes [ ] No [x]
4. Thesis Credit: Yes [ ] No [x]

COURSE ATTRIBUTES: Check All That Apply
1. Pass/Not Pass Only [ ]
2. Satisfactory/Unsatisfactory Only [ ]
3. Repeatable [ ]
Maximum Repeatable Credit: [ ]
4. Credit by Examination [ ]
5. Special Fees [ ]
6. Registration Approval Type
Department [ ] Instructor [ ]
7. Variable Title [ ]
8. Honors [ ]
9. Full Time Privilege [ ]
10. Off Campus Experience [ ]

Schedule Type	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated
Lecture	75	2	16	
Recitation				
Presentation				
Laboratory				
Lab Prep				
Studio				
Distance				
Clinic				
Experiential				
Research				
Ind. Study				
Pract/Observ				

Cross-Listed Courses

RECEIVED
2012 FEB 27 AM 10: 39
OFFICE OF THE REGISTRAR

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):

Graduate Standing.
Doctoral level course dealing with engineering design of nanomedical devices for drug/gene delivery. The course covers medical needs for nanomedicine; uses of nanomaterials, biomarkers and targeting strategies; uses of bionanotechnology instrumentation for characterization of nanomedical systems and their interactions with cells; drug/gene delivery methods; biodistribution and nanotoxicity issues; FDA regulations and cGMP (current Good Manufacturing Practices) bionanomanufacturing principles. Professor Leary.

Calumet Department Head	Date	Calumet School Dean	Date	Calumet Undergrad Curriculum Committee	Date
Fort Wayne Department Head	Date	Fort Wayne School Dean	Date	Fort Wayne Chancellor	Date
Indianapolis Department Head	Date	Indianapolis School Dean	Date	V.R. Cipra 10/17/2011 Undergrad Curriculum Committee	Date
North Central Department Head	Date	North Central School Dean	Date	APPROVED 2/16/12 Date Approved by Graduate Council	
Lori R. Wodlinger 7/27/11 West Lafayette Department Head	Date	Thomas J. Talavage 10/3/11 West Lafayette College/School Dean	Date	Tina L. Hayne 2/23/12 Graduate Council Secretary	Date
George E. Leary 2/16/12 Graduate Area Committee Convener	Date	Graduate Dean	Date	West Lafayette Registrar	Date

OFFICE OF THE REGISTRAR

3/14/12

Supporting Document for a New Graduate Course

To: Purdue University Graduate Council

From:
Faculty Member: James F. Leary
Department: Biomedical Engineering
Campus: West Lafayette

Date: 07/26/11

Subject: Proposal for New Graduate Course-Documentation Required by the Graduate Council to Accompany Registrar's Form 40G

For Reviewer's comments only (Select One)

Reviewer:

Comments:

Contact for information if questions arise:
Name: Cindy Ferguson
Phone Number: 496-1320
E-mail: fergusoc@purdue.edu
Campus Address: BME/MJIS

Course Subject Abbreviation and Number: BME 62600

Course Title: Engineering Nanomedical Systems

A. Justification for the Course:

- Provide a complete and detailed explanation of the need for the course (e. g., in the preparation of students, in providing new knowledge/training in one or more topics, in meeting degree requirements, etc.), how the course contributes to existing majors and/or concentrations, and how the course relates to other graduate courses offered by the department, other departments, or interdisciplinary programs.

- Justify the level of the proposed graduate course (50000- or 60000-level) including statements on, but not limited to: (1) the target audience, including the anticipated number of undergraduate and graduate students who will enroll in the course; and (2) the rigor of the course.

B. Learning Outcomes and Method of Evaluation or Assessment:

- Describe the course objectives and student learning outcomes that address the objectives (i.e., knowledge, communication, critical thinking, ethical research, etc.).

- Describe the methods of evaluation or assessment of student learning outcomes. (Include evidence for both direct and indirect methods.)

- Grading criteria (select from dropdown box); include a statement describing the criteria that will be used to assess students and how the final grade will be determined.

Criteria: Papers and Projects

- Identify the method(s) of instruction (select from dropdown box) and describe how the methods promote the likely success of the desired student learning outcomes.

Method of Instruction Lecture

C. Prerequisite(s):

- List prerequisite courses by subject abbreviation, number, and title.
- List other prerequisites and/or experiences/background required. If no prerequisites are indicated, provide an explanation for their absence.

D. Course Instructor(s):

- Provide the name, rank, and department/program affiliation of the instructor(s).
- Is the instructor currently a member of the Graduate Faculty? X Yes ___ No
  (If the answer is no, indicate when it is expected that a request will be submitted.)

E. Course Outline:

- Provide an outline of topics to be covered and indicate the relative amount of time or emphasis devoted to each topic. If laboratory or field experiences are used to supplement a lecture course, explain the value of the experience(s) to enhance the quality of the course and student learning. For special topics courses, include a sample outline of a course that would be offered under the proposed course.

F. Reading List (including course text):

- A primary reading list or bibliography should be limited to material the students will be required to read in order to successfully complete the course. It should not be a compilation of general reference material.
- A secondary reading list or bibliography should include material students may use as background information.

G. Library Resources

- Describe the library resources that are currently available or the resources needed to support this proposed course.

H. Example of a Course Syllabus (While not a necessary component of this supporting document, an example of a course syllabus is available, for information, by clicking on the link below, which goes to the *Graduate School's Policies and Procedures Manual for Administering Graduate Student Programs*. See Appendix K.)

http://www.gradschool.purdue.edu/downloads/Graduate_School_Policies_and_Procedures_Manual.pdf

A. Justification for Course:

There is a need to train students in the emerging multidisciplinary disciplines of bionanotechnology and its application to nanomedicine.

B. Learning Outcomes and Method of Evaluation or Assessment:

There are 2 in-class exams, 3 primary literature paper reviews, with the major assessment a 10-15 page, single-spaced written project where the student uses everything learned in the course to design a nanomedical system in an area of research interest of that student (after consultation with the course instructor).

Grade Assessment:

Literature Reviews (3)	30 %
Project – Original Individual Research Proposal	30 %
Exam 1	15 %
Exam 2	15 %
Class attendance and class participation	10 %

C. Prerequisite(s): There are no course prerequisites. Because students apply to BME from a broad range of disciplines (engineering, physics, math, etc) it would be difficult to define a set of course prerequisites. While there are no prerequisites, interested students must be currently enrolled in a graduate program at Purdue University.

D. Course Instructor(s): James F. Leary, Ph.D.
Professor of Biomedical Engineering and Basic Medical Sciences
SVM Professor of Nanomedicine

E. Course Outline (from Fall, 2010):

Lecture Topics and Schedule:

- Need for new perspectives on medicine
- Basic concepts of nanomedicine
- Overview of basic nanomedical systems design
- Targeting nanomedical systems to cells & assessing specificity
- Rare-event targeting of cells in-vitro and in-vivo
- Normal & facilitated cell entry mechanisms
- Nanomaterials for core design
- Surface chemistry: attaching targeting and therapeutic molecules to the core
- Assessing zeta potentials
- Atomic Force Microscopy for measuring nanoparticles and cells
- Assessing nanomaterial composition by XPS (Dr. Dmitry Zemlyanov)
- Challenges of proper drug dosing with nanodelivery systems
- Nanodelivery therapeutic drugs/genes & molecular biosensor feedback control systems
- Assessing drug efficacy and nanotoxicity at the single cell level
- Animal testing of nanodelivery systems (Prof. Debbie Knapp)

- Designing nanodelivery systems for in-vivo use, issues of biodistribution
- Nanotoxicity at the single-cell level
- Quality control manufacturing, life cycle assessment, work/environmental regulations
- Human clinical trials, FDA approval process
- Designing/evaluating integrated nanomedical systems: In class Original Research Proposal Presentations by students

F. Reading List (including course text):

1. Leary, J.F. "Nanotechnology: What is it and why is small so big" Canadian Journal of Ophthalmology 45(5):449-456 (2010).
2. Haglund, E., Seale-Goldsmith, M-M., Leary, J. F. "Design of Multifunctional Nanomedical Systems" Annals of Biomedical Engineering Annals of Biomedical Engineering, Vol. 37, No. 10, pp. 2048–2063 (2009).
3. Seale, M-M, Leary, J.F. "Nanobiosystems" in Wiley Interdisciplinary Reviews: Nanomedicine and Nanobiotechnology, J.R. Baker, Editor, Wiley Press, NY 1: 553–567 (2009).

G. Library Resources

Primary literature used in course is presented as PDF documents on an intranet course website from scientific articles obtained electronically from Purdue Libraries.

H. Example of a Course Syllabus from Fall 2010:

BME 695N Engineering Nanomedical Systems 2010

Supporting Documentation:

Person-In-Charge: James F. Leary, email: jfleary@purdue.edu, Office: BRK 2021

Course Details: meets Tuesdays and Thursdays at 1:30 – 2:45 PM in BME (MJIS) 1083

Office hours: By appointment

Lecture Topics and Schedule:

Week 1 (August 24 & 26)

Need for new perspectives on medicine
Basic concepts of nanomedicine + **Paper #1 - distributed** on August 26 due Sept. 23

Week 2 (August 31 and September 2)

Overview of basic nanomedical systems design +
Original Research Project paper info + Tour of cytometry and bio-nano facilities

Week 3 (September 7 & 9)
Targeting nanomedical systems to cells & assessing specificity
Rare-event targeting of cells in-vitro and in-vivo

Week 4 (September 14 & 16)
Normal & facilitated cell entry mechanisms
Nanomaterials for core design

Week 5 (September 21 & 23) + **Paper review #1 due September 23**
Surface chemistry: attaching targeting and therapeutic molecules to the core
Assessing zeta potentials

Week 6 (September 28 & 30)
Atomic Force Microscopy for measuring nanoparticles and cells (Prof. Helen McNally)
Tour of BioScope AFM Facility

Week 7 (October 5 & 7)+ **Paper review 2 distributed on 10-5-2010 DUE: 10-28-2010**
Review session **October 7 - Exam I** (in class)

Week 8 (October 12 & 15) (Dr. Leary out of country)
October 12 (October break - no class)
October 14 – Assessing nanomaterial composition by XPS (Dr. Dmitry Zemlyanov)

Week 9 (October 19 & 21)
Challenges of proper drug dosing with nanodelivery systems
Nanodelivery therapeutic drugs/genes & molecular biosensor feedback control systems

Week 10 (October 26 & 28)
Paper review 2 due on 10-26-2010 + ***Paper review 3 distributed on 10-26-2010 DUE: 11-23-2010***
Assessing drug efficacy and nanotoxicity at the single cell level
Animal testing of nanodelivery systems (Prof. Debbie Knapp)

Week 11 (November 2 & 4) **Abstract for Class Project Due: November 4**
Designing nanodelivery systems for in-vivo use, issues of biodistribution
Nanotoxicity at the single-cell level

Week 12 (November 9 & November 11)
Quality control manufacturing, life cycle assessment, work/environmental regulations
Human clinical trials, FDA approval process

Week 13 (November 16 & 18)
Designing/evaluating integrated nanomedical systems: Review session for final exam
Exam2 (In-class Final Exam on November 18)

Week 14 (November 23 & 25) **Paper Review 3 due on 11-23-2010**
No class, in lieu of the special lecture on November 18 – work on your class projects!
November 25 (NO CLASS- Thanksgiving Break)

Week 15 (November 30 & December 2) **Written Class Project due for ALL students on or before midnight on 11/29/2010**

In class Original Research Proposal Presentations
In class Original Research Proposal Presentations

Week 16 (December 7 & 9)

In class Original Research Proposal Presentations
In class Original Research Proposal Presentations

Grade Assessment:

Literature Reviews (3)	30 %
Project – Original Individual Research Proposal	30 %
Exam 1	15 %
Exam 2	15 %
Class attendance and class participation	10 %

Required Text: None – discussions and assignments based on primary literature

I. Frequency of offerings

This course will be offered in the Fall semester each year.

J. Course Evaluation

The students are evaluated in three areas, corresponding to the three goal areas of the course: (1) 2 in-class exams covering lecture material content, (2) critical reviews of three primary literature papers to build critical reading skills of the primary literature in this field, and (3) a major written project integrating and incorporating all aspects of the course and primary literature to design an original nanomedical system in an area of interest to the individual students.

K. Course Comments

2010 Course evaluations:

3b - PICES course based questions	**(N=10) Mean. Scored from 1-5 w/5 being highest.**
Q6 I understand what is expected of me in this course.	4.8
Q7 This course has clearly stated objectives.	4.6
Q8 This course material is pertinent to my professional training.	4.5
Q9 The course appears to be well organized.	4.7
Q10 Challenging questions are raised for discussions.	4.9
BME Questions about Course	
Q11 From this course, I have gained knowledge in this particular field of biomedical engineering.	4.9
Q12 From this course, I have gained knowledge in this particular sub-discipline of biomedical engineering.	4.7
Q13 From this course, I have gained more confidence in my literature analysis skills.	4.7
Q14 Exams and/or assignments are creative and require original thought.	4.7

2010 Course comments:

- Introduces each topic with an 'onion skin' big-picture to finer details type of approach. This allows comprehensive understanding of how all the pieces fit together and provides the student with an opportunity to fully understand the expansive intricacies of such a sophisticated and novel field.

- In my opinion, this is the best Purdue BME class offered, and I'm left with excitement for the future of nanomedical systems.

- I enjoy having different people coming in to discuss their fields of expertise that apply to the course. This is something that he should keep doing.

- I think final project is a good way to let students to know how to have a beginning in the research of Nanomedicine.

L. Grade Distribution

2010: 1B+ 2A- 7A 2A+

M. Miscellaneous Information

BME 02000

Scheduling

- IDENTIFY ACTIVITIES:
  - for administrators who are not part of MOU group or Govt Leadership meeting - 8:30 – 10 a.m. Wed Oct. 12
  - Oct. 13 breakout sessions – what do bio people do during nanotech Break-out Session (9:15-10:30 a.m.); what do nano people during biotech Break-out Session 2 (10:45 – noon)
  - for bio people during Pedro Prieto's Status Centro nacional de nanotecnologa presentation – 1 – 2 p.m. Oct. 13
  - VIPs
  - Confirm CSAP volunteer times (email sent to Katherine Oct. 1)
- IDENTIFY TOUR GUIDE:
  - Nuclear Reactor
  - Particle Accelerator
  - Bowen / NEES
- IDENTIFY PRESENTER:
  - Overview of DP (Tuesday, 8:10 – 8:25 a.m. in Morgan 102 / cafe)
  - Tim Sands for both 8 am. Wed welcome to all guests and 9:15 Thurs Welcome to administrators before an IP seminar (both in morgan 121) – EMAILED KRISTY FRIDAY NIGHT
  - Cyber-Infrastructure Presentation for NSF, Colciencias – 1-2:30 p.m.
  - Stress to tech leads need to contact faculty re posters, abstracts
  - Check with Kristy re the following:
    - Richard Buckius – 9:50 – 10:15 a.m. - presentation providing an overview of Discovery Park
    - PRF / Purdue Research Park / OTC – 10:20 – 10:45 a.m. – no speaker identified. A note was sent to Vicky Montenegro expressing our interest in having the OTC director as one speaker during this time; we have not yet heard back.
    - Bill Anderson – 11:20 – 11:40 a.m. - presentation re GEP
    - Susan Fisher – 11:40 – noon - presentation re how Graduate Programs manage Colciencias and Colfuturo students
    - Ekhard Groll and Yating Haller – noon – 12:20 - discuss GEARE and Young Investigator Scholars Program
  - Identify technical session facilitators

Transportation

- Meet with Lafayette Limo to ensure clear communication – WED LUNCH MEETING
  - Talk to shuttle services re airport group service, drop off at Holiday Inn; Union pick ups and drop offs
- Confirm driver for Restrepo and Montoya
- Drivers for rectors Gabriel Cadena and Ricardo Gomez? (arrive Oct. 10)

Documents

- Prepare Registration Checklist

- Write Welcome Packet letter; Put Welcome Packets together
- Finalize Abstract Book
- Prepare Info packet for Cordova
- Individualized Agendas (VIPs, Admins, Bement, Jamieson, others?)

Gifts

- Check re CoE notepads and Ag pens
- Put CPIASR labels on water bottles
- Prepare blankets and glasses in gift bags
- Prepare KCC slideshow and digital picture frame

Meals

- Extend Purdue invites to all dinners (Red Seven, Shively, Union) and picnic lunch

Misc.

- Confirm Bindley, Birck tours match tech leads plans

BME 62600

Engineering Faculty Document No. 02-12

August 31, 2011

TO: The Faculty of the College of Engineering

FROM: The Faculty of the School of Biomedical Engineering

RE: New Graduate Course, BME 62600, Engineering Nanomedical Systems

The Faculty of the School of Biomedical Engineering has approved the following new course. This action is now submitted to the Engineering Faculty with a recommendation for approval.

BME 62600: Engineering Nanomedical Systems
Term Offered: Fall, Lecture 3, Cr. 3
Prerequisites: Graduate Standing

Course Description: Doctoral level course dealing with engineering design of nanomedical devices for drug/gene delivery. The course will cover medical needs for nanomedicine, use of nanomaterials, biomarkers and targeting strategies, use of bionanotechnology instrumentation for characterization of nanomedical systems and their interactions with cells, drug/gene delivery methods, biodistribution and nanotoxicity issues, FDA regulations, and cGMP (current Good Manufacturing Practices) bionanomanufacturing principles.

Reason: This course will serve as a focal point of discourse for doctoral students in BME and other departments for an in-depth understanding of the application of bionanoengineering and bionanotechnology to nanomedicine. This course will help to fulfill the depth requirements for doctoral candidates in BME.

The course is currently in its third offering with 16 students currently enrolled (12 BME, 1BMS, 1 ABE, 2 CHM). It has been offered twice in the past with 16 students enrolled in Fall 2009 (15 BME, 1 Interdisc Comparative Med), and 12 students enrolled in Fall 2010 (7 BME, 1 ME, 1 IE, 2 BMS, 1 EE).

George R. Wodicka

George R. Wodicka, Professor and Head
Weldon School of Biomedical Engineering

APPROVED FOR THE FACULTY
OF THE SCHOOLS OF ENGINEERING
BY THE ENGINEERING
CURRICULUM COMMITTEE

ECC Minutes #4

Date 10/2/11

Chairman ECC R. Cipra

A. Justification for Course:

There is a need to train students in the emerging multidisciplinary disciplines of bionanotechnology and its application to nanomedicine.

B. Learning Outcomes and Method of Evaluation or Assessment:

There are 2 in-class exams, 3 primary literature paper reviews, with the major assessment a 10-15 page, single-spaced written project where the student uses everything learned in the course to design a nanomedical system in an area of research interest of that student (after consultation with the course instructor).

Grade Assessment:

Literature Reviews (3)	30 %
Project – Original Individual Research Proposal	30 %
Exam 1	15 %
Exam 2	15 %
Class attendance and class participation	10 %

C. Prerequisite(s): There are no course prerequisites. Because students apply to BME from a broad range of disciplines (engineering, physics, math, etc) it would be difficult to define a set of course prerequisites. While there are no prerequisites, interested students must be currently enrolled in a graduate program at Purdue University.

D. Course Instructor(s): James F. Leary, Ph.D.
Professor of Biomedical Engineering and Basic Medical Sciences
SVM Professor of Nanomedicine

E. Course Outline (from Fall, 2010):

Lecture Topics and Schedule:

- Need for new perspectives on medicine
- Basic concepts of nanomedicine
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- Animal testing of nanodelivery systems (Prof. Debbie Knapp)

- Designing nanodelivery systems for in-vivo use, issues of biodistribution
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- Quality control manufacturing, life cycle assessment, work/environmental regulations
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- Designing/evaluating integrated nanomedical systems: In class Original Research Proposal Presentations by students

F. Reading List (including course text):

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G. Library Resources

Primary literature used in course is presented as PDF documents on an intranet course website from scientific articles obtained electronically from Purdue Libraries.

H. Example of a Course Syllabus from Fall 2010:

BME 695N Engineering Nanomedical Systems 2010

Supporting Documentation:

Person-In-Charge: James F. Leary, email: jfleary@purdue.edu, Office: BRK 2021

Course Details: meets Tuesdays and Thursdays at 1:30 – 2:45 PM in BME (MJIS) 1083

Office hours: By appointment

Lecture Topics and Schedule:

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Basic concepts of nanomedicine + **Paper #1 - distributed** on August 26 due Sept. 23

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In class Original Research Proposal Presentations
In class Original Research Proposal Presentations

Week 16 (December 7 & 9)

In class Original Research Proposal Presentations
In class Original Research Proposal Presentations

Grade Assessment:

Literature Reviews (3)	30 %
Project – Original Individual Research Proposal	30 %
Exam 1	15 %
Exam 2	15 %
Class attendance and class participation	10 %

Required Text: None – discussions and assignments based on primary literature

I. Frequency of offerings

This course will be offered in the Fall semester each year.

J. Course Evaluation

The students are evaluated in three areas, corresponding to the three goal areas of the course: (1) 2 in-class exams covering lecture material content, (2) critical reviews of three primary literature papers to build critical reading skills of the primary literature in this field, and (3) a major written project integrating and incorporating all aspects of the course and primary literature to design an original nanomedical system in an area of interest to the individual students.

K. Course Comments

2010 Course evaluations:

3b - PICES course based questions	**(N=10) Mean. Scored from 1-5 w/5 being highest.**
Q6 I understand what is expected of me in this course.	**4.8**
Q7 This course has clearly stated objectives.	**4.6**
Q8 This course material is pertinent to my professional training.	**4.5**
Q9 The course appears to be well organized.	**4.7**
Q10 Challenging questions are raised for discussions.	**4.9**
BME Questions about Course	
Q11 From this course, I have gained knowledge in this particular field of biomedical engineering.	**4.9**
Q12 From this course, I have gained knowledge in this particular sub-discipline of biomedical engineering.	**4.7**
Q13 From this course, I have gained more confidence in my literature analysis skills.	**4.7**
Q14 Exams and/or assignments are creative and require original thought.	**4.7**

2010 Course comments:

- Introduces each topic with an 'onion skin' big-picture to finer details type of approach. This allows comprehensive understanding of how all the pieces fit together and provides the student with an opportunity to fully understand the expansive intricacies of such a sophisticated and novel field.

- In my opinion, this is the best Purdue BME class offered, and I'm left with excitement for the future of nanomedical systems.

- I enjoy having different people coming in to discuss their fields of expertise that apply to the course. This is something that he should keep doing.

- I think final project is a good way to let students to know how to have a beginning in the research of Nanomedicine.

L. Grade Distribution

2010: 1B+ 2A- 7A 2A+

M. Miscellaneous Information

BME 62600

Duncan, Lauren N

From: Brightman, Andrew O
Sent: Friday, March 16, 2012 9:05 AM
To: Duncan, Lauren N; Leary, James F
Subject: RE: RE: BME 62600

Jim,

Will you approve these learning outcomes as appropriate for the course?

1) Students will be able to describe general problems and approaches to the design of engineered nanomedical systems.
2) Students will be able to explain the basic concepts of design of integrated nanomedical systems for diagnostics and therapeutics.

I think this is all that is needed to complete the catalog.

Thanks so much for tackling this on vacation!]
Andrew

From: Duncan, Lauren N
Sent: Thursday, March 15, 2012 2:56 PM
To: Brightman, Andrew O; Ferguson, Cynthia L; Leary, James F
Cc: 'George Wodicka'
Subject: RE: RE: BME 62600

Andrew,

Great! Thank you for the update. Would it be possible to get them by lunch time? I'd like to make sure our office has enough time to complete your request.

Thank you again,
Lauren

From: Brightman, Andrew O
Sent: Thursday, March 15, 2012 8:54 AM
To: Duncan, Lauren N; Ferguson, Cynthia L; Leary, James F
Cc: 'George Wodicka'
Subject: RE: RE: BME 62600

Yes, Lauren, We will have these learning outcomes to you by Friday.

Thanks,
Andrew Brightman,
Assistant Head

From: George Wodicka [mailto:wodicka@purdue.edu]
Sent: Wednesday, March 14, 2012 4:43 PM
To: Brightman, Andrew O
Subject: Fw: RE: BME 62600