

Course Information

Date Submitted: 12/6/2013

Current Prefix and Number: BME - Biomedical Engineering , BME 488G INTRODUCTION TO BIOMATERIALS

Other Course:

Proposed Prefix and Number: BME 488

What type of change is being proposed?

Major Change

Should this course be a UK Core Course? No

1. General Information

a. Submitted by the College of: ENGINEERING

b. Department/Division: Biomedical Engineering

c. Is there a change in 'ownership' of the course? No

If YES, what college/department will offer the course instead: Select...

e. Contact Person

Name: David Puleo

Email: puleo@uky.edu

Phone: 7-2405

Responsible Faculty ID (if different from Contact)

Name: David Puleo

Email: puleo@uky.edu

Phone: 7-2405

f. Requested Effective Date

Semester Following Approval: Yes OR Effective Semester:

2. Designation and Description of Proposed Course

a. Current Distance Learning (DL) Status: N/A

b. Full Title: INTRODUCTION TO BIOMATERIALS

Proposed Title: INTRODUCTION TO BIOMATERIALS

c. Current Transcript Title: INTRODUCTION TO BIOMATERIALS

Proposed Transcript Title: INTRODUCTION TO BIOMATERIALS

d. Current Cross-listing: none

Proposed – ADD Cross-listing :

Proposed – REMOVE Cross-listing:

e. Current Meeting Patterns

LECTURE: 3

Proposed Meeting Patterns

LECTURE: 3

f. Current Grading System: ABC Letter Grade Scale

Proposed Grading System: *Letter (A, B, C, etc.)*

g. Current number of credit hours: 3

Proposed number of credit hours: 3

h. Currently, is this course repeatable for additional credit? No

Proposed to be repeatable for additional credit? No

If Yes: Maximum number of credit hours:

If Yes: Will this course allow multiple registrations during the same semester? No

2i. Current Course Description for Bulletin: Study of biological and man-made materials that perform, improve, or restore natural functions. Structure and properties of connective tissue and commonly implanted metals, ceramics, and polymers; biocompatibility of materials used in orthopedic, soft tissue, and cardiovascular applications.

Proposed Course Description for Bulletin: Study of biological and man-made materials that perform, improve, or restore natural functions. Structure and properties of connective tissue and commonly implanted metals, ceramics, and polymers; biocompatibility of materials used in orthopedic, soft tissue, and cardiovascular applications. Prereq: Engineering standing and MSE 201; or consent of instructor.

2j. Current Prerequisites, if any: Prereq: Engineering standing, MSE 201, and MSE 301; or consent of instructor.

Proposed Prerequisites, if any: Prereq: Engineering standing and MSE 201; or consent of instructor.

2k. Current Supplementary Teaching Component:

Proposed Supplementary Teaching Component: No Change

3. Currently, is this course taught off campus? No

Proposed to be taught off campus? No

If YES, enter the off campus address:

4. Are significant changes in content/student learning outcomes of the course being proposed? No

If YES, explain and offer brief rationale:

5a. Are there other depts. and/or pgms that could be affected by the proposed change? No

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SENATE COUNCIL

If YES, identify the depts. and/or pgms:

5b. Will modifying this course result in a new requirement of ANY program? No

If YES, list the program(s) here:

6. Check box if changed to 400G or 500: No

Distance Learning Form

Instructor Name:

Instructor Email:

Internet/Web-based: No

Interactive Video: No

Hybrid: No

1. How does this course provide for timely and appropriate interaction between students and faculty and among students? Does the course syllabus conform to University Senate Syllabus Guidelines, specifically the Distance Learning Considerations?

2. How do you ensure that the experience for a DL student is comparable to that of a classroom-based student's experience? Aspects to explore: textbooks, course goals, assessment of student learning outcomes, etc.

3. How is the integrity of student work ensured? Please speak to aspects such as password-protected course portals, proctors for exams at interactive video sites; academic offense policy; etc.

4. Will offering this course via DL result in at least 25% or at least 50% (based on total credit hours required for completion) of a degree program being offered via any form of DL, as defined above?

If yes, which percentage, and which program(s)?

5. How are students taking the course via DL assured of equivalent access to student services, similar to that of a student taking the class in a traditional classroom setting?

6. How do course requirements ensure that students make appropriate use of learning resources?

7. Please explain specifically how access is provided to laboratories, facilities, and equipment appropriate to the course or program.

8. How are students informed of procedures for resolving technical complaints? Does the syllabus list the entities available to offer technical help with the delivery and/or receipt of the course, such as the Information Technology Customer Service Center (<http://www.uky.edu/UKIT/>)?

9. Will the course be delivered via services available through the Distance Learning Program (DLP) and the Academic Technology Group (ATL)? NO

If no, explain how student enrolled in DL courses are able to use the technology employed, as well as how students will be provided with assistance in using said technology.

10. Does the syllabus contain all the required components? NO

11. I, the instructor of record, have read and understood all of the university-level statements regarding DL.

Instructor Name:

SIGNATURE|CHE202|Kimberly W Anderson|BME 488G CHANGE College Review|20140213

SIGNATURE|JMETT2|Joanie Ett-Mims|BME 488G CHANGE Undergrad Council Review|20140417

Courses	Request Tracking
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Course Change Form

<https://myuk.uky.edu/sap/bc/soap/rfc?services=>

[Open in full window to print or save](#)

Generate F

Attachments:

Upload File

Browse...

ID	Attachment
Delete 2702	Syllabus - BME 488 mod from 488G.pdf

First 1 Last

Select saved project to retrieve... Get New

NOTE: Start form entry by choosing the Current Prefix and Number
(*denotes required fields)

Current Prefix and Number:	BME - Biomedical Engineering BME 488G INTRODUCTION TO BIOMATERIALS	Proposed Prefix & Number: (example: PHY 401G) <input type="checkbox"/> Check if same as current	BME 488
* What type of change is being proposed?		<input checked="" type="checkbox"/> Major Change <input type="checkbox"/> Major - Add Distance Learning <input type="checkbox"/> Minor - change in number within the same hundred series, exce 799 is the same "hundred series" <input type="checkbox"/> Minor - editorial change in course title or description which does change in content or emphasis <input type="checkbox"/> Minor - a change in prerequisite(s) which does not imply a chan course content or emphasis, or which is made necessary by the el or significant alteration of the prerequisite(s) <input type="checkbox"/> Minor - a cross listing of a course as described above	
Should this course be a UK Core Course? <input type="radio"/> Yes <input checked="" type="radio"/> No If YES, check the areas that apply: <input type="checkbox"/> Inquiry - Arts & Creativity <input type="checkbox"/> Composition & Communications - II <input type="checkbox"/> Inquiry - Humanities <input type="checkbox"/> Quantitative Foundations <input type="checkbox"/> Inquiry - Nat/Math/Phys Sci <input type="checkbox"/> Statistical Inferential Reasoning <input type="checkbox"/> Inquiry - Social Sciences <input type="checkbox"/> U.S. Citizenship, Community, Diversity <input type="checkbox"/> Composition & Communications - I <input type="checkbox"/> Global Dynamics			
1. General Information			
a.	Submitted by the College of: ENGINEERING	Submission Date: 12/6/2013	
b.	Department/Division: Biomedical Engineering		
c.*	Is there a change in "ownership" of the course? <input type="radio"/> Yes <input checked="" type="radio"/> No If YES, what college/department will offer the course instead? Select...		
e.*	* Contact Person Name: David Puleo	Email: puleo@uky.edu	Phone: 7-2405
	* Responsible Faculty ID (if different from Contact): David Puleo	Email: puleo@uky.edu	Phone: 7-2405
f.*	Requested Effective Date:	<input checked="" type="checkbox"/> Semester Following Approval	OR Specific Term: ²
2. Designation and Description of Proposed Course.			
a.	Current Distance Learning(DL) Status:	<input checked="" type="radio"/> N/A <input type="radio"/> Already approved for DL* <input type="radio"/> Please Add <input type="radio"/> Please Drop	
*If already approved for DL, the Distance Learning Form must also be submitted unless the department affirms (by checking this box) that the proposed chan affect DL delivery.			
b.	Full Title:	INTRODUCTION TO BIOMATERIALS	Proposed Title: * INTRODUCTION TO BIOMATERIAL
c.	Current Transcript Title (if full title is more than 40 characters):	INTRODUCTION TO BIOMATERIALS	

c. Proposed Transcript Title (if full title is more than 40 characters):		INTRODUCTION TO BIOMATERIALS			
d. Current Cross-listing:	<input checked="" type="checkbox"/> N/A	OR	Currently ³ Cross-listed with (Prefix & Number):	none	
Proposed – ADD ³ Cross-listing (Prefix & Number):					
Proposed – REMOVE ^{3,4} Cross-listing (Prefix & Number):					
e. Courses must be described by at least one of the meeting patterns below. Include number of actual contact hours ⁵ for each meeting pattern					
Current:	Lecture 3	Laboratory ²	Recitation	Discussion	Indep. Study
	Clinical	Colloquium	Practicum	Research	Residency
	Seminar	Studio	Other: Please explain:		
Proposed: *	Lecture 3	Laboratory ²	Recitation	Discussion	Indep. Study
	Clinical	Colloquium	Practicum	Research	Residency
	Seminar	Studio	Other: Please explain:		
f. Current Grading System:	ABC Letter Grade Scale				
Proposed Grading System:*	<input checked="" type="radio"/> Letter (A, B, C, etc.) <input type="radio"/> Pass/Fail <input type="radio"/> Medicine Numeric Grade (Non-medical students will receive a letter grade) <input type="radio"/> Graduate School Grade Scale				
g. Current number of credit hours:	3	Proposed number of credit hours:*	3		
h.* Currently, is this course repeatable for additional credit?					<input type="radio"/> Yes <input checked="" type="radio"/> No
* Proposed to be repeatable for additional credit?					<input type="radio"/> Yes <input checked="" type="radio"/> No
If YES:	Maximum number of credit hours:				
If YES:	Will this course allow multiple registrations during the same semester?				<input type="radio"/> Yes <input type="radio"/> No
i. Current Course Description for Bulletin:	Study of biological and man-made materials that perform, improve, or restore natural functions. Structure and properties of connective tissue and commonly implanted metals, ceramics, and polymers; biocompatibility of materials used in orthopedic, soft tissue, and cardiovascular applications.				
* Proposed Course Description for Bulletin:	Study of biological and man-made materials that perform, improve, or restore natural functions. Structure and properties of connective tissue and commonly implanted metals, ceramics, and polymers; biocompatibility of materials used in orthopedic, soft tissue, and cardiovascular applications. Prereq: Engineering standing and MSE 201; or consent of instructor.				
j. Current Prerequisites, if any:	Prereq: Engineering standing, MSE 201, and MSE 301; or consent of instructor.				
* Proposed Prerequisites, if any:	Prereq: Engineering standing and MSE 201; or consent of instructor.				

k.	Current Supplementary Teaching Component, If any:	<input type="radio"/> Community-Based Experience <input type="radio"/> Service Learning <input type="radio"/> Both
	Proposed Supplementary Teaching Component:	<input type="radio"/> Community-Based Experience <input type="radio"/> Service Learning <input type="radio"/> Both <input checked="" type="radio"/> No Change
3.	Currently, is this course taught off campus?	<input type="radio"/> Yes <input checked="" type="radio"/> No
*	Proposed to be taught off campus?	<input type="radio"/> Yes <input checked="" type="radio"/> No
	If YES, enter the off campus address:	
4.*	Are significant changes in content/student learning outcomes of the course being proposed?	<input type="radio"/> Yes <input checked="" type="radio"/> No
	If YES, explain and offer brief rationale:	
5.	Course Relationship to Program(s).	
a.*	Are there other depts and/or pgms that could be affected by the proposed change?	<input type="radio"/> Yes <input checked="" type="radio"/> No
	If YES, identify the depts. and/or pgms:	
b.*	Will modifying this course result in a new requirement ² for ANY program?	<input type="radio"/> Yes <input checked="" type="radio"/> No
	If YES ² , list the program(s) here:	
6.	Information to be Placed on Syllabus.	
a.	<input type="checkbox"/> Check box if changed to 400G or 500.	If changed to 400G- or 500-level course you must send in a syllabus and you must include the differentiation between under and graduate students by: (i) requiring additional assignments by the graduate students; and/or (ii) establishing different grade in the course for graduate students. (See SR 3.1.4.)

¹See comment description regarding minor course change. *Minor changes are sent directly from dean's office to Senate Council Chair.* If Chair deems the change as "not minor," the form will be appropriate academic Council for normal processing and contact person is informed.

²Courses are typically made effective for the semester following approval. No course will be made effective until all approvals are received.

³Signature of the chair of the cross-listing department is required on the Signature Routing Log.

⁴Removing a cross-listing does not drop the other course – it merely unlinks the two courses.

⁵Generally, undergrad courses are developed such that one semester hr of credit represents 1 hr of classroom meeting per wk for a semester, exclusive of any lab meeting. Lab meeting generally least two hrs per wk for a semester for 1 credit hour. (See SR 5.2.1.)

⁶You must also submit the Distance Learning Form in order for the course to be considered for DL delivery.

⁷In order to change a program, a program change form must also be submitted.

Submit as New Proposal Save Current Changes

BME 488
Introduction to Biomaterials
Fall 2014

Class Meetings: Tuesdays and Thursdays, 9:30 - 10:45 a.m.
19 Wenner-Gren Laboratory

Instructor: David Puleo, Ph.D.
Office: 209 Wenner-Gren Lab
Telephone: 257-2405
E-mail: puleo@uky.edu
Office Hours: Tuesdays from 11:05 a.m. - 12:30 p.m. or by appointment

Course Description

Study of biological and man-made materials that perform, improve, or restore natural functions. Structure and properties of connective tissues and commonly implanted metals, ceramics, and polymers; biocompatibility of materials used in orthopedic, soft tissue, and cardiovascular applications.

Prerequisites

Engineering standing and MSE 201; or consent of instructor.

Learning Outcomes

After completing this course successfully, a student should be able to:

- 1) Describe and explain the structure, properties, and function of important hard and soft connective tissues, including bone, tendons, ligaments, and cartilage.
 - 2) Apply engineering modeling and analysis to relate structure and properties of natural and synthetic biomaterials.
 - 3) Describe and explain the structure, properties, and function of important metallic, ceramic, and polymeric biomaterials.
 - 4) Describe and explain cellular responses involved in hemostasis, wound healing, and inflammation in relation to biological performance of implanted materials ("biocompatibility").
 - 5) Apply all of the items above in engineering design of orthopedic, soft tissue, and cardiovascular implants.
 - 6) Critically review biomaterials research studies and new technology.
-

Course Grade

exams (3)	20% each	quizzes	10%
device analysis		assignments	10%
final report	10%	class participation	5%
oral presentation	5%		

Points in each category will be totaled and weighted as described above to arrive at a final grade using the standard grading scale: A = 90-100%; B = 80-89%; C = 70-79%; D = 60-69%; E = 50-59%. If warranted, a curve based on the distribution of final scores may be applied to adjust final grades. If used, the curve will make only small adjustments based on the statistical distribution of overall scores. Scores grouped near the top will receive As, the next major grouping gets Bs, etc.

Examinations

Closed book exams are tentatively scheduled for September 29, November 1, and December 1. Crib sheets will not be allowed. There will not be a final examination.

Device Analysis

Individual students will select a topic from the attached list for a Medical Device Analysis. Each topic may be assigned to only one student, and selections are available first come, first served. Sections to be included are: (a) A Common Use, (b) History, (c) Materials Used, (d) FDA Classification, (e) Current Problems, (f) Speculation on Future Use, (g) Current Experimental Studies, and (h) References. The final report will consist of no more than a single page of 12 pt. text with 1.5 line spacing and 1" margins. Papers are due by 8:00 a.m. on December 5; both electronic and paper submissions are needed. Late papers will be penalized 10% per day.

At the end of the semester, each student will orally present his/her analysis to the class. Presentations should be approximately 5 minutes, followed by 2 minutes for questions. They will take place on December 6 and 8, and if needed, the final exam time (Monday, Dec. 12, at 10:30 a.m.) will be used to finish the presentations.

Quizzes

Short "pop" quizzes will be given every one to two weeks during the semester.

Homework Assignments

A limited number of homework assignments will be used to supplement content covered during class. They are an opportunity for students to assess their understanding of basic concepts at relatively little risk to their final grade. Although discussion of homework questions is permissible, students are required to independently write their solutions. Assignments are due at the beginning of class. Late assignments will be penalized 10%/day.

Textbook

Recommended: *Biomaterials Science: An Introduction to Materials in Medicine*, Ratner, B.D., Hoffman, A.S., Schoen, F.J., and Lemons, J.E. (eds.), 3rd Ed., Academic Press, San Diego, 2013.

Selected sections from books and journals will be made available as needed.

Mid-term Grade

Mid-term grades will be posted in myUK by the deadline established in the Academic Calendar (<http://www.uky.edu/Registrar/AcademicCalendar.htm>).

Attendance Policy

Attendance is recommended and will be considered when deciding borderline final grades.

Make-up Policy

If needed, one comprehensive make-up exam will be given to students with excused absences. The instructor must be notified of anticipated absences in advance. The make-up exam time will be scheduled as needed. Missed quizzes and other assignments will also be accepted with an excused absence.

Excused Absences

Students need to notify the professor of absences prior to class when possible. S.R. 5.2.4.2 defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit “reasonable cause for nonattendance” by the professor.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class.

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused or unexcused) per university policy.

Verification of Absences

Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request “appropriate verification” when students claim an excused absence because of illness or death in the family. Appropriate notification of absences due to university-related trips is required prior to the absence.

Academic Integrity

Per university policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the university may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code

of Student Rights and Responsibilities. Complete information can be found at the following website: <http://www.uky.edu/Ombud>. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Part II of Student Rights and Responsibilities (<http://www.uky.edu/StudentAffairs/Code/part2.html>) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about the question of plagiarism involving their own work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgement of the fact, the students are guilty of plagiarism. Plagiarism includes reproducing someone else's work, whether it be a published article, chapter of a book, a paper from a friend or some file, or something similar to this. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be.

Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone. When a student's assignment involves research in outside sources of information, the student must carefully acknowledge exactly what, where and how he/she employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiarism.

Written assignments you turn in may be submitted to SafeAssign via Blackboard for comparison with a collection of other previously submitted works and those available on public web sites.

Accommodations Due to Disability

If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (Room 2, Alumni Gym, 257-2754, email address: jkarnes@email.uky.edu) for coordination of campus disability services available to students with disabilities.

Classroom Behavior

Please assist in creating a good learning environment free of distractions. Use of cell phones, including text messaging, is not permitted during class.

BME 488
Introduction to Biomaterials
Fall 2013

Lecture Schedule

Week of	Tuesday	Thursday
August 26		Introduction
September 2	Proteins - Collagen (begin)	Collagen (finish) - Mechanical Functions of Tissue Components
September 9	Tendons - Preconditioning	Strain Rate Dependence - Cartilage (begin)
September 16	Cartilage (finish) - Bone (classifications)	Bone (anatomy - different structures)
September 23	Bone (mechanical properties)	No Class
September 30	Bone (remodeling) - Blood Vessels	Exam 1
October 7	Materials Review (begin)	Materials Review (finish) - Co-Cr-Mo (begin)
October 14	Co-Cr-Mo (finish) - Ti and Ti-6Al-4V	Alumina - Calcium Phosphates (begin)
October 21	Calcium Phosphates (finish) - Bioactive Glasses	Polymers (structure - nylons)
October 28	Polymers (PMMA - biodegradables)	Porous Coatings
November 4	Exam 2	Hemostasis - Wound Healing (begin)
November 11	Wound Healing (finish) - Thromboresistant Materials (begin)	Thromboresistant Materials (finish)
November 18	Soft Tissue-Biomaterial Interactions	Fracture Healing - Bone-Biomaterial Interactions (begin)
November 25	Bone-Biomaterial Interactions (finish) - Systemic Effects (begin)	No Class (Thanksgiving)
December 2	Systemic Effects (finish) - Conclusion	Exam 3
December 9	Presentations	Presentations
December 16	Presentations (if needed) on Monday, Dec. 16, at 3:30 p.m.	

BME 488
Biomaterials Science & Engineering
Fall 2013

Reading in *Biomaterials Science: An Introduction to Materials in Medicine* (3rd Edition)

Topic	Pages
Introduction	xxv-xxxix, xli-liii, 63-64
Biological Materials	
Connective tissue molecules	195-200
Synthetic Materials	
Metals	111-127, 321-324, 855-864
Ceramics	128-166
Polymers	64-111, 166-195, 241-258
Sterilization	1339-1353
Responses to Injury or Invasion	
Hemostasis	551-557
Wound healing	499-512
Immune response	512-545
Tissue-implant interactions	
Biocompatibility	587-592
Cardiovascular applications	617-634, 758-810
Soft tissue applications	1006-1024
Orthopedic applications	841-882
Drug delivery	1024-1027, 1055-1087
Tissue engineering	1119-1137
Dental applications	882-888
Tumorigenesis	558-565
Infection	345-354
Failure	1361-1383

BME 488
Biomaterials Science & Engineering
Fall 2013

Reading in *Biomaterials Science and Engineering*
(in BME library)

Topic	Pages
Biological Materials	
Tissue components	119-129
Soft tissues	113-118, 147-166
Mineralized tissues	129-146

Reading in *Basic Histology*
(in BME library)

Topic	Pages
Biological Materials	
Connective tissue molecules	91-104
Connective tissues	113-118
Cartilage	127-135
Bone	137-159
Blood vessels	214-228

BME 488

Introduction to Biomaterials

Fall 2014

Device Analysis Topics

1. Artificial blood
2. Biodegradable bone fixation plate
3. Biodegradable interference screw
4. Caps (dental restorations)
5. Cardiac catheter (balloon angioplasty)
6. Contact lens
7. Coronary stent
8. Craniofacial reconstruction plates
9. Dialysis tubing
10. Dynamic compression plate
11. Ear drainage tubes (myringotomy tubes)
12. Elbow replacement
13. Extra corporeal membrane oxygenator (ECMO) membranes
14. Fillings (dental restorations)
15. Finger joint
16. Foley (urinary) catheter
17. Guided tissue regeneration barrier
18. Heart valves (natural)
19. Heart valves (synthetic)
20. Hernia repair mesh
21. Hip replacement
22. Hydrocephalic shunt (drain)
23. Implantable defibrillator electrodes
24. Intraocular lens
25. Knee replacement
26. Ligament replacements
27. Pacemaker electrodes
28. Peripheral vessel stent
29. Shoulder replacement
30. Stent graft for aneurysm
31. Tissue engineering scaffolds
32. Transdermal drug delivery patches
33. Tympanic membrane (ear)
34. Ureteral stent

Ellis, Janie

From: Nikou, Roshan
Sent: Tuesday, December 09, 2014 1:05 PM
To: Brothers, Sheila C; Carvalho, Susan E; Ellis, Janie; Ett, Joanie M; Hippisley, Andrew R; Jackson, Brian A; Lindsay, Jim D.; Nikou, Roshan; Price, Cleo; Timoney, David M
Cc: Zook, Matthew A; Schein, Richard H; Perkins, Andrea L; Maloney, Doreen
Subject: Transmittals

TO: Andrew Hippisley, Chair and Sheila Brothers, Coordinator
Senate Council

FROM: Brian Jackson, Chair and Roshan Nikou, Coordinator
Graduate Council

Graduate Council approved the following proposals and is now forwarding them to the Senate Council to approve. All the courses listed below have been forwarded to the Senate Council via e-Cats.

Courses

- ✓MAP 671 Introduction to New Mapping
- ✓MAP 672 Programming for Web Mapping
- ✓MAP 673 Design for Interactive Web Mapping
- ✓MAP 698 Final Project Preparation
- ✓MAP 699 Final Project Implementation
- ✓BST 693 Statistical Practice in Public Health
- ✓A-S 547 Digital media and Design Project
- BMI 488G Introduction to Biomaterials Dr. Creamer

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