UNIVERSITY OF KENTUCKY

New Course Report

3/16/2015 10:24:44 AM

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OFFICE OF THE SENATE COUNCIL

1. General Information

1a. Submitted by the College of: ENGINEERING

Date Submitted: 2/25/2014

1b. Department/Division: Department of Biomedical Engineering

1c. Contact Person

Name: Guoqiang Yu

Email: guoqiang.yu@uky.edu

Phone: 859-257-9110

Responsible Faculty ID (if different from Contact)

Name:

Email:

Phone:

1d. Requested Effective Date: Specific Term/Year [1] Fall 2015

1e. Should this course be a UK Core Course? No

2. Designation and Description of Proposed Course

2a. Will this course also be offered through Distance Learning?: No

2b. Prefix and Number: BME 580

2c. Full Title: Introduction to Biomedical Imaging

2d. Transcript Title: Introduction to Biomedical Imaging

2e. Cross-listing:

2f. Meeting Patterns

LECTURE: 3

2g. Grading System: Letter (A, B, C, etc.)

2h. Number of credit hours: 3

2i. Is this course repeatable for additional credit? No

If Yes: Maximum number of credit hours:

If Yes: Will this course allow multiple registrations during the same semester?

2j. Course Description for Bulletin: A comprehensive introduction to bio-medical imaging systems used today, including xray imaging and computed tomography (CT), magnetic resonance imaging (MRI), ultrasound imaging (UI), and diffuse optical tomography (DOT). The course will review the fundamental mathematics underlying each imaging modality, the hardware needed to implement each system, and the image reconstruction and analysis. The class may involve homework, projects, and exams.

2k. Prerequisites, if any: EE 305, or consent of instructor

2l. Supplementary Teaching Component:

3. Will this course taught off campus? No

If YES, enter the off campus address:

4. Frequency of Course Offering: Fall,

Will the course be offered every year?: Yes

If No, explain:

5. Are facilities and personnel necessary for the proposed new course available?: Yes

If No, explain:

6. What enrollment (per section per semester) may reasonably be expected?: 20

7. Anticipated Student Demand

Will this course serve students primarily within the degree program?: No

Will it be of interest to a significant number of students outside the degree pgm?: Yes

If Yes, explain: This course will be of interest to students in other engineer disciplines. It may be able to serve as a free or technical elective.

8. Check the category most applicable to this course: Traditional – Offered in Corresponding Departments at Universities Elsewhere,

If No, explain:

9. Course Relationship to Program(s).

a. Is this course part of a proposed new program?: Yes

If YES, name the proposed new program: Minor in Biomedical Engineering

b. Will this course be a new requirement for ANY program?: No

If YES, list affected programs:

10. Information to be Placed on Syllabus.

a. Is the course 400G or 500?: Yes

b. The syllabus, including course description, student learning outcomes, and grading policies (and 400G-/500-level grading differentiation if applicable, from **10.a** above) are attached: Yes

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|PULEO|David A Puleo|BME 580 NEW Dept Review|20140225

SIGNATURE|BJSTOK0|Barbara J Brandenburg|BME 580 NEW College Review|20140909

SIGNATURE|JMETT2|Joanie Ett-Mims|BME 580 NEW Undergrad Council Review|20150226

SIGNATURE|ZNNIKO0|Roshan Nikou|BME 580 NEW Graduate Council Review|20150316

Courses | Request Tracking

New Course Form

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

Open in full window to print or save

Generate R

Attachments:

Browse... Upload File

	ID	Attachment
Delete	4486	Yu_BME_580_Syllabus 2015 (revised).docx

First 1 Last

Select saved project to retrieve... Get New

(*denotes required fields)

1. General Information

a. * Submitted by the College of: ENGINEERING Submission Date: 2/25/2014

b. * Department/Division: Department of Biomedical Engineering

c.

* Contact Person Name: Guoqiang Yu Email: guoqiang.yu@uky.edu Phone: 859-257-9110

* Responsible Faculty ID (if different from Contact) Email: Phone:

d. * Requested Effective Date: ○ Semester following approval OR ◉ Specific Term/Year [1] Fall 2015

e.

Should this course be a UK Core Course? ○ Yes ◉ No

If YES, check the areas that apply:

☐ Inquiry - Arts & Creativity	☐ Composition & Communications - II
☐ Inquiry - Humanities	☐ Quantitative Foundations
☐ Inquiry - Nat/Math/Phys Sci	☐ Statistical Inferential Reasoning
☐ Inquiry - Social Sciences	☐ U.S. Citizenship, Community, Diversity
☐ Composition & Communications - I	☐ Global Dynamics

2. Designation and Description of Proposed Course.

a. * Will this course also be offered through Distance Learning? ○ Yes [4] ◉ No

b. * Prefix and Number: BME 580

c. * Full Title: Introduction to Biomedical Imaging

d. Transcript Title (if full title is more than 40 characters): Introduction to Biomedical Imaging

e. To be Cross-Listed [2] with (Prefix and Number):

f. * Courses must be described by at least one of the meeting patterns below. Include number of actual contact hours[3] for each meeting pattern type.

3	Lecture		Laboratory[1]		Recitation		Discussion
	Indep. Study		Clinical		Colloquium		Practicum
	Research		Residency		Seminar		Studio
	Other	If Other, Please explain:					

g. * Identify a grading system:

◉ Letter (A, B, C, etc.)
○ Pass/Fail
○ Medicine Numeric Grade (Non-medical students will receive a letter grade)
○ Graduate School Grade Scale

h. * Number of credits: 3

i. * Is this course repeatable for additional credit? ○ Yes ◉ No

If YES: Maximum number of credit hours:

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

j. * Course Description for Bulletin:

A comprehensive introduction to bio-medical imaging systems used today, including xray imaging and computed tomography (CT), magnetic resonance imaging (MRI), ultrasound imaging (UI), and diffuse optical tomography (DOT). The course will review the fundamental mathematics underlying each imaging modality, the hardware needed to implement each system, and the image reconstruction and analysis. The class may involve homework, projects, and exams.

k. Prerequisites, if any:

EE 305, or consent of instructor

l. Supplementary teaching component, if any: ○ Community-Based Experience ○ Service Learning ○ Both

3. *** Will this course be taught off campus?** ○ Yes ◉ No

If YES, enter the off campus address:

4. **Frequency of Course Offering.**

a. * Course will be offered (check all that apply): ☑ Fall ☐ Spring ☐ Summer ☐ Winter

b. * Will the course be offered every year? ◉ Yes ○ No

If No, explain:

5. *** Are facilities and personnel necessary for the proposed new course available?** ◉ Yes ○ No

If No, explain:

6. *** What enrollment (per section per semester) may reasonably be expected?** 20

7. **Anticipated Student Demand.**

a. * Will this course serve students primarily within the degree program? ○ Yes ◉ No

b. * Will it be of interest to a significant number of students outside the degree pgm? ◉ Yes ○ No

If YES, explain:

This course will be of interest to students in other engineer disciplines. It may be able to serve as a free or technical elective.

8. *** Check the category most applicable to this course:**

☑ Traditional – Offered in Corresponding Departments at Universities Elsewhere
☐ Relatively New – Now Being Widely Established
☐ Not Yet Found in Many (or Any) Other Universities

9. **Course Relationship to Program(s).**

a. * Is this course part of a proposed new program? ◉ Yes ○ No

If YES, name the proposed new program:

Minor in Biomedical Engineering

b. * Will this course be a new requirement [5] for ANY program? ○ Yes ◉ No

If YES [5], list affected programs::

10. **Information to be Placed on Syllabus.**

a. * Is the course 400G or 500? ◉ Yes ○ No
If YES, the *differentiation for undergraduate and graduate students must be included* in the information required in **10.b.** You must include: (i) identi additional assignments by the graduate students; and/or (ii) establishment of different grading criteria in the course for graduate students. (See SR

b. ☑ * The syllabus, including course description, student learning outcomes, and grading policies (and 400G-/500-level grading differentiation if appl **10.a** above) are attached.

[4] Courses are typically made effective for the semester following approval. No course will be made effective until all approvals are received.
[5] The chair of the cross-listing department must sign off on the Signature Routing Log.

[3] In general, undergraduate courses are developed on the principle that one semester hour of credit represents one hour of classroom meeting per week for a semester, exclusive of any laboratory meeting. Laboratory meeting, generally, re two hours per week for a semester for one credit hour. (from SR 5.2.1)
[4] You must also submit the Distance Learning Form in order for the proposed course to be considered for DL delivery.
[5] In order to change a program, a program change form must also be submitted.

Rev 8/09

Submit as New Proposal Save Current Changes

BME 580
Introduction to Biomedical Imaging
Fall 2015

Class Coordinator: Guoqiang Yu, PhD, 204 Wenner-Gren, 2579110, guoqiang.yu@uky.edu

Teaching Team: Dr. Jie Zhang (jie.zhang1@uky.edu)

Dr. David Powell (dkpowe00@mri.uky.edu)

Dr. Guoqiang Yu (guoqiang.yu@uky.edu)

Course Description: A comprehensive introduction to bio-medical imaging systems used today, including x-ray imaging and computed tomography (CT), magnetic resonance imaging (MRI), ultrasound imaging (UI), and diffuse optical tomography (DOT). The course will review the fundamental mathematics underlying each imaging modality, the hardware needed to implement each system, and the image reconstruction and analysis. The class may involve homework, projects, and exams.

Prerequisite: EE 305 or consent of instructor

Student Learning Outcomes: After completing this course successfully, a student will be able to:

1. Describe the principles and instrumentation for medical imaging
2. Understand the results from medical imaging
3. Describe the applications of medical imaging

Class Meetings: Mondays, Wednesdays, and Fridays (12:00-12:50 pm)

Class Places: Department of Biomedical Engineering (Location is to be determined)

Recommended Texts: Introduction to Biomedical Imaging, Andrew Webb (2003)

Other reading materials may be provided by individual faculty members, as needed.

Course Grading: Class attendance is required and will be considered in determining the final grade. Final grades will be determined by the four Blocks (CT, MRI, UI, DOT); 25% each.

The University's accreditation association and policy of the Graduate School require different assignments and/or grading criteria for undergraduate and graduate students in 400G- and 500-level courses. For that reason, assessment criteria for graduate students in this class will be more stringent. This means that graduate students will be held to a higher standard of performance and will earn less partial credit for inaccuracies, incomplete and superficial discussion of experimental results, etc. Assessment scores will be totaled to arrive at the final grade using the standard grading scale: A=90-100%; B=80-89%; C=70-79%; D=60-69%; E=0-59% for undergaduate students, and A=90-100%; B=80-89%; C=70-79%; E=0-69% for graduate students.

If warranted, a curve based on the distribution of final scores may be applied to adjust final grades, separately for undergraduate and graduate students. If used, the curve will make only small adjustments based on the statistical distribution of overall scores. Scores grouped near the top will get As, the next major grouping gets Bs, etc. If anything, the curve will only raise a grade; a curve will never lower a grade. For example, the lowest grade an 89% overall score can get is B, but if there is a curve, it might be worth an A.

Students who fall ill, or who know they will be missing an exam for a valid reason (see Excused Absences) are encouraged to notify the instructor by phone or e-mail prior to the exam, if at all possible. Students missing an exam without a valid excuse will

receive a grade of 0 for that exam. The make-up exam time will be scheduled as needed. Missed quizzes and other assignments will also be accepted with an excused absence.

Course Policies:

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.

Make-up Opportunities

Students who provide appropriate documentation of excused absences will be permitted to turn in late assignments no later than "one (1) week after the absences" (University Senate Rules 5.2.4.2, B -16)

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

Students are expected to maintain professional standards of decorum in the classroom. The use of cellphones (including texting), tablets and laptops during lectures should not be necessary, and will be permitted only in exceptional circumstances (e.g., phone availability in case of family emergency). No devices (other than approved calculators) may be out during quizzes and exams.

Class Schedule (tentative)

Block 1: Aug 28 to Sep 18
"X-Ray Imaging and CT"
Instructor: Dr. Zhang
EXAM 1 (Sep 18)

Block 2: Sep 21 to Oct 16
"Magnetic Resonance Imaging"
Instructor: Dr. Powell
EXAM 2 (Oct 16)

Block 3: Oct 19 to Dec 11
"Ultrasonic Imaging" and "Near-infrared Diffuse Optical Tomography"
Instructor: Dr. Yu
EXAM 3 (Based on University's schedule between Dec 16 to Dec 20)

Ellis, Janie

From:	Nikou, Roshan
Sent:	Monday, March 16, 2015 10:00 AM
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:	Fox, Charles W; Yu, Guoqiang; Wilson, John; Studts, Jamie L; Yeager, Kevin; Anastacio, Enrique &
Subject:	Transmittals
Attachments:	PLS 455G.pdf

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. Please note, the Graduate Council received the attached course proposal, PLS 455G via email.

Courses

ABT 505 Evolution in Agriculture, Medicine & Conservation Biology
BME 580 Introduction to Biomedical Imaging
MFS 503 Lean Manufacturing Principles & Practice
BSC 732 Interdisciplinary Protocol Development
PLS 455G Wetland Delineation
EES 579 Groundwater Geophysics

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