MEMO



WELDON SCHOOL OF **BIOMEDICAL ENGINEERING**

206 S. Martin Jischke Drive West Lafayette, IN 47907-2032 (765) 494-2995 Fax: (765) 494-1193

TO:

William Oakes

Michael Harris

FROM:

George R. Wodicka

DATE:

01/22/16

SUBJ:

Request to fast track minor changes to BME 29000

We are submitting only a Form 40 to make a minor update to the catalog record for the course: BME 29000 - Frontiers in Biomedical Engineering.

The only changes being made are:

- 1) changing the record of course type from seminar to studio since this is the preferred designation for this type of active learning course, and
- 2) changing the record of instructional hours from 50 to 100 minutes per meeting to be consistent with the active learning studio mode of this course in which most of the assignments are completed during class time with oversight and feedback from direct interactions with course instructional staff.

Since no substantive changes are being made to the course, we are not submitting a revised EFD for this update. We request a fast track of these minor changes as stated above. See attached Form 40.

> Approved for the faculty of the Schools of Engineering by the Engineering Curriculum Committee

ECC Minutes

Office of the Registrar

PURDUE UNIVERSITY REQUEST FOR ADDITION, EXPIRATION,

Print Form

FORM 40 REV. 5/11	OR REVISION OF AN U (10000-	NDERGRADUATE 40000 LEVEL)	COURSE		
DEPARTMENT Biomedical Engineering	E	EFFECTIVE SESS	SION Fall 2016		
INSTRUCTIONS: Please check the items below	which describe the purpose of this	s request.			
1. New course with supporting door 2. Add existing course offered at ar 3. Expiration of a course 4. Change in course number 5. Change in course title Change in course credit/type		11.	Change in course attribu Change in instructional h Change in course descrip Change in course requisi Change in semesters offe Transfer from one depart	ours ption ites ered (departme	ent head signature only)
PROPOSED:	EXISTING:			TEF	RMS OFFERED
Subject Abbreviation	Subject Abbreviation	BME		Chec Fall [k All That Apply:
Course Number	Course Number	29000		CAMPL	JS(ES) INVOLVED
Long Title				Calumet Cont Ed	N. Central Tech Statewide
Short Title Frontiers in BME	-			Ft. Wayne	W. Lafayette
Abbreviated title will be entered	by the Office of the Registrar if or	nitted. (30 CHARACT	ERS ONLY)	Indianapolis	
CREDIT TYPE		COURSE AT	TRIBUTES: Check All Tha	t Apply	
1.Fixed Credit: Cr. Hrs. 2.Variable Credit Range: Minimum Cr. Hrs (Check One) To Or Maximum Cr. Hrs. 3.Equivalent Credit: Yes No	1. Pass/Not Pass Only 2. Satisfactory/Unsatisfactory Onl 3. Repeatable Maximum Repeatable Credit: 4. Credit by Examination 5. Fees: Coop Lab R Include comment to explain fee	y	 Registration App Departmen Variable Title Honors Full Time Privileg Off Campus Ex 	proval Type t	Instructor
ScheduleType Minutes Meetings Pe Per Mtg Week		***************************************	•	Г	Cross-Listed Courses
Lecture Recitation Presentation Laboratory Lab Prep	Office				
Studio 100 1	16				
Clinic Experiential Research				L	
Ind. Study					
Pract/Observ					
COURSE DESCRIPTION (INCLUDE REQUISITES	s/RESTRICTIONS):				
*COURSE LEARNING OUTCOMES:					

Calumet Department Head Date	Calumet School Dean	I	Date		
Fort Wayne Department Head Date	Fort Wayne School Dean	[Date		
Indianapolis Department Head Date	Indianapolis School Dean		Date		
North Central Faculty Senate Chair, Date Deon as P. Wydicka 1/22/1	Vice Chancellor for Academic Affairs	D ///	ate		
West Lafayette Department Head Date	West Lafayette College/School Dean	0 8	ate West Lafayette	Registrar	Date

TO:

The Faculty of the College of Engineering

FROM:

The Faculty of the School of Biomedical Engineering

RE:

Undergraduate Course, BME 29000, Frontiers in Biomedical Engineering

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

From:

BME 29000 Frontiers in Biomedical Engineering

Term offered: Fall, Lecture 1, Cr. 1

Restriction: Must be enrolled in the School of Biomedical Engineering (BME)

Description: This course introduces the rapidly emerging field of biomedical engineering by exposing students to a wide range of research activities in the Weldon School and to a variety of experiential learning opportunities. Topics addressed include career paths, professional development opportunities, and career development skills including creating a plan of study, informational and job interviewing, writing a resume, technical writing, preparing effective oral presentations, and peer-editing.

To:

BME 29000 Frontiers in Biomedical Engineering

Term offered: Fall, Studio 2, Cr. 1

Restriction: Must be enrolled in the School of Biomedical Engineering (BME)

Description: This course introduces the rapidly emerging field of biomedical engineering by exposing students to a wide range of research activities in the Weldon School and to a variety of experiential learning opportunities. Topics addressed include career paths, professional development opportunities, and career development skills including creating a plan of study, informational and job interviewing, writing a resume, technical writing, preparing effective oral presentations, and peer-editing.

Reason: The course has been taught 2 times previously as an impact course under the temporary course number BME 29500. The change in schedule type from lecture to studio and the instructional hours from 50 to 100 minutes is in order to accurately represent the active-learning focus of the impact studio class format of this course in which most of the assignments are completed during class time with oversight and feedback from direct interactions with course instructional staff. This format has been introduced for each of our professional development courses: BME 29000, BME 39000, and BME 49000.

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

BME 29500: Frontiers in Biomedical Engineering

Course Syllabus for Fall 2015

Course Instructor:

Office: MJIS 1021A

Dr. Andrew Brightman

Email: aob@purdue.edu

Undergraduate Program Coordinator:

Office: MJIS 1021C

Mr. Corey Linkel

Email: linkel@purdue.edu

Teaching Assistant:

Office Hours: Mon 5-7 PM - MJIS study rooms

Mr. Matthew Pharris

Email: mpharris@purdue.edu

Undergraduate Academic Advisor:

Office: MJIS 1021B

Ms. Kate Marrero

Email: kmarrero@purdue.edu

Admin Assistant/Schedule Deputy:

Office: MJIS 1021

Ms. Cindy Ferguson

Email: fergusoc@purdue.edu

Course Time:

Mondays, 1:30 - 3:20 PM (**except 9/9, 6:30-8 PM, MJIS Atrium)

Course Location:

MJIS 1001

Course Description:

BME 295 is a 1-credit, active learning course that explores the elements of professionalism, opportunities, and current and emerging trends and challenges in the field of biomedical engineering. Most class sessions will consist of a short lecture-style introduction to a topic followed by a breakout session for active investigation of the topic. Since most class sessions will require the use of a computer, it is recommended that you bring a laptop/tablet if you have one. Otherwise, the BME computer lab can be used. During the breakout sessions, course instructors will circulate to help answer questions.

Course Outcomes:

Based on the ABET accredited program outcomes, students will be able to:

- G2 Construct a logical and articulate argument in written format from independent collection of information.
- G3 Construct and deliver a logical and articulate oral presentation based on independent collection of information.
- G4 Evaluate oral and/or written presentations for clarity and content.
- H3 Identify and/or describe how biomedical engineering solutions affect society
- I2 Identify multiple career pathways that are available to a biomedical engineer.
- I3 Recognize opportunities that enhance professional career development.
- J1 Recognize contemporary issues impacting biomedical engineering.

Class Participation Policy: Class participation is worth 28% of your BME 295 grade. Missed classes will result in a 2% participation grade reduction per incident. If a student misses an inclass assignment, he/she will lose the points for that assignment in addition to losing attendance points. Students are considered "in attendance" if they are present and have completed the attendance assignment. Failure to demonstrate completion of the end of course evaluation by 12/12/2014 will result in a 50% reduction of participation grade.

In cases of unavoidable absences due to extenuating circumstances (e.g., death in family, illness), the course TA should be contacted immediately (preferably prior to the class) and written documentation will be required.

Academic Conduct: Integrity is an integral part of both the educational process and professional expectations for engineers. Academic integrity of the highest standard is expected of all students in the Weldon School of Biomedical Engineering. Purdue University provides students with information regarding academic dishonesty here:

https://www.purdue.edu/odos/welcome/academic-integrity/. Please review this webpage before returning to class.

Every student in this course is expected to adhere to the highest standards of professional ethical behavior. Academic dishonesty in this course may result in a range of responses, from a grade penalty to a failing grade. Any grade penalty will accompany a report to the Dean of Students for follow-up.

Campus Emergency Response Procedures:

- Fire Alarm Evacuate the building using the exits on the south side (end closer to Harrison Street) of MJIS. Only gather personal items if it does not jeopardize your safety. Assist those who need help, if possible. Proceed to the west side of Lilly Hall. Report to a course instructor your name before leaving the emergency assembly area.
- All Hazards Warning Siren When you hear the outdoor siren, immediately seek
 shelter/shelter-in-place. For a tornado, move to the MJIS basement. The siren will be
 accompanied with a text message alert and a web update at www.purdue.edu/emergency.

In the case of an emergency or other unforeseen circumstance, this syllabus is subject to change. Notice of changes will be provided via both email and through Blackboard Learn.

BME 295 Course Schedule:

Date	5 Course Schedule: Lecture Topics	Activities	LO	Accidence + D.
3,107 00000000000000000000000000000000000		Activities	91 244 X 1/14/1/2021	Assignment Due
8/24	• Introduction to Frontiers in	Brainstorming activity	I3 H3	Bring your
	Biomedical Engineering	Customizing a resume	113	Resume Packet to
	• Introduction to BME 295			class on 8/31
	Quick Look: Resume Packet Academic Advisory			
0/21	Academic Advisor		-	D D I
8/31	• Intro to Discussion Board	• STAR activity	G4 H3	Resume Packet:
	Road to obtaining a job:	Resume peer review	13	8/31, 11:59 pm on Blackboard
	searching to acceptance		J1	Learn (BBL)
	• Thank you notes			*First week of
	Informational interviewing of			Discussion Board
0/7	BMEs working in the field			
9/7	Labor Day – NO CLASS			*No Discussion
9/9**	6:30-8:00 pm in MJIS Atrium	Informational	12	Board this week See 9/14
3/3	Poster Session		12 13	See 9/14
	• Poster Session	interviewing of poster	10	
9/14	Intro to cover letters	presenters Cover letter activity	G3	Reflection &
5/14	Fundamentals of an elevator	Elevator pitch activity	G4	Thank You Note:
	pitch	Elevator pitch activity	13	9/14, 11:59 PM,
	Alternate: attend 2 IR seminars	(see Extra Credit)		BBL
9/21	Professional communication	• IR debrief	I2	Professional Com
-,	Intro to Ethics as a	Professional	G2	& Ethics, Part A:
	professional value in BME	communication activity	G4	9/21, 11:59 PM,
	professional value in bine	• Ethics case study	I3	BBL
9/28	Cond Chadant Bassant Line	·	J1	
3/20	• Grad Student Presentation: how to succeed in undergrad	• Ethics team activity	G2 G3	Ethics, Part B: 9/28, 11:59 PM,
	Forming and Presenting a		Н3	BBL 11:39 PW,
	logical argument on a		13	Response to B:
	biomedical engineering		J1	10/5, 1:30 PM,
	problem			BBL
10/5	LinkedIn introduction:	Group registration for	G2	Plan of Study:
.,-	networking, identifying jobs,	Spring 2014	I3	10/19, in class
	& exploring certain fields	 Plan of Study activity 		,, •
	Finding your path in the	is a country		
	Undergraduate Program			
10/12	October Break – NO CLASS			*No Discussion Board
10/19	Literature research and	Literature searching and	I3	See 10/26
	advanced database tools	referencing activity		-
	(Web of Knowledge)			
	• Faculty Presentation			

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10/26	 Job searching (Indeed.com +) Uncovering faculty through web research Patent searching 	 Job Search activity Faculty Profile research	I2 I2 I3 J1	Lit Search: 10/26, 11:59 PM, BBL
11/2	Constructive criticismSearching thesis abstractsFaculty Presentation	Constructive criticism activityFaculty Profile research	G2 I3 J1	Faculty Profile: 11/2, 11:59 PM, BBL
11/9	 Peer Review: How to evaluate work for content and organization Intro to Senior Design Abstract Rubric 	All-class peer review activity	G4 I3 J1	Read your assigned Abstract on BBL prior to class on 11/16
11/16	Personal DiversityFaculty Presentation	 Senior design abstract peer review activity, Parts A and B 	G4 I3 J1	Team Review: 11/16, 11:59 PM, BBL Solo Review: 11/16, 11:59 PM, BBL
11/23	NO CLASS (to compensate for evening class on 9/9)			*No Discussion Board
11/30	 Medical School panel Grad Student panel: graduate school, MD/PhD, 5th year MS, industry, 	• End of semester reflection	12 13	Reflection: 11/30, 11:59 PM, BBL *Final week of Discussion Board
12/7	Interviewing skills and etiquette	Peer Interview activity	G4 I3	None

BME 295 Gradina Scheme:

Activity	Value	Due Date
Class attendance	28	Required submission during
		each class session
Discussion Board	10	Continuous
Resume Packet	9	8/31
Poster Session Reflection	5	9/13
Thank You Note	5	9/13
Professional Communication	5	9/21
Ethics activity (Part A=5 points, Part B=3)	8	A: 9/21, B:9/28 & 10/5
Plan of study activity	5	10/19 (in class)
Literature searching and referencing activity	5	10/26
Faculty Profile	5	11/2
Abstract Peer Reviews (5 pts each part)	10	A: 11/16, B: 11/18
End of semester reflection	5	11/30
Total	100 %	

Grading Scale:

A+	97-100 points	B+	87-89	C+	77-79	D+	67-69
Α	93-96	В	83-86	С	73-76	D	63-66
A-	90-92	B-	80-82	C-	70-72	D-	60-62
						F	Below 60 points

Assignment Submission Process: All written activities must be submitted through Blackboard Learn (BBL) (https://mycourses.purdue.edu/) by 11:59 PM on the day the assignment is due (unless otherwise noted). Most assignments are designed to be completed in-class, and are due the same day they are assigned. All submissions must be titled in the following format: "Your_Name_Assignment_Title" (example: Corey_Linkel_Resume_Packet.doc)

Activity Descriptions:

- Course Discussion Board: Over the course of the semester you are to find news articles about BME and post them using the "Discussions" function in Blackboard Learn (BBL). This assignment consists of two parts:
 - <u>PART 1</u>: You will be assigned to create 1 discussion thread during the semester. The assignment schedule is posted on BBL. On the week you have been assigned, you have until 11:59 pm on Wednesday of your assigned week to post your thread.

To create a new discussion thread:

- 1. Click **Discussions** located in the Content area of BBL
- 2. Click "BME in the news"
- 3. Click Create Thread on the top gray tool bar
 - a. Subject: Name the thread something meaningful about the article
 - b. Message: Add the URL for the article, a brief description, and pose one critical think question for your classmates that will initiate a discussion.

Additionally, you must continue the dialogue on your thread throughout the week, replying to responses by other students (see below). These replies must be posted by Monday at 11:59 pm for each week.

<u>PART 2</u>: All students not assigned to do part 1 that week must post at least 1 response to 1 discussion thread. These responses must contain substance (see example on BBL). Responses are due each week by Friday at 11:59 pm.

Assignment Timeline

Wed	Thurs	Fri	Sat/Sun	Mon
11:59 pm – <u>p</u> ost		11:59 pm – post		11:59 pm – post replies
article to BBL		response to BBL		to responses in part 2
(part 1)		(part 2)		(part 1)

- Resume packet: You are to customize your resume to a specific job description. In class instructors will show you how to find industrial and research positions for undergraduate biomedical engineers. Customized Resumes must include the following information: education and related coursework, work experience with supporting activities that align with the position being applied for, and a list of appropriate technical skills. Living resumes will include more high school experience. Customized resumes must be formatted in a manner that enhances the content, and must be free of spelling and grammatical errors. It is highly recommended that you make use of Purdue's CCO and OWL resume services for this assignment. This activity is to be submitted through BBL and formatted as follows: The first page is the job description, second page is the customized resume, and the third page is the living resume. Failure to submit documents in this order will result in a 2 point reduction in overall score. This assignment will be very strictly graded.
- Poster session reflection: You will attend a poster session on experiential learning opportunities that upperclassmen BME students have experienced and compose a reflection statement about the event. Posters will showcase student experiences while on COOP, internship, study abroad, and academic research. The reflection statement on the event should explore what you learned from the event and how you can use that information as you pursue a career path in biomedical engineering. The statement should be one 1 page in length, double spaced, 12 point font. The reflection statement should be submitted via BBL.
- Thank you note: You will attend a poster session on experiential learning opportunities that upperclassmen BME students have experienced and compose a thank you note. Posters will showcase student experiences while on COOP, internship, study abroad, and academic research. You are required to receive contact information from at least 1 individual and write a thank you email as discussed in class. This is to be submitted via BBL as well.
- **Professional Communication:** Based on the class lecture and guidelines provided, you will choose one of four hypothetical scenarios and draft an email:
 - **1.** Asking a professor to join the research team in their lab (*good choice if you are considering graduate school*)
 - 2. Asking a professor for a letter of recommendation (good choice if you are considering medical school)
 - 3. Asking a professor for a regrade/grade change (good choice for anyone)
 - **4.** Asking a professor to meet for career advice (good choice if you are undecided or considering a career in industry)

In class, you will write a draft of an email, including subject line, for review by your classmates. You are expected to critique (using the guidelines provided) at least one other student's draft email, from a different scenario than the one you chose. Based on feedback, make improvements to your own hypothetical email, include at the bottom the name of each student who critiqued it, and submit it via BBL

- Ethics activity: You will work to explore processes of ethical decision making that biomedical engineers use in the field in a two-part assignment.
 - PART A: You will write a draft email of your response to the scenario posted on BBL, and then you will outline or diagram or flowchart the reasoning steps or pathway or process that you used to support your response. Be as detailed as you can to cover all aspects involved. This will be submitted via BBL on 9/21. (5 points)
 - O PART B: Find either an interesting case study in BME ethics, or an effective diagram of an ethical decision-making model, and post it as a New Discussion Thread on BBL (in the same manner as the Discussion Board assignment). The new thread is due 9/28 on BBL. Then respond substantively to at least one other student's thread that is the other type (case study/decision-making model) from the one you posted. Your response is due on BBL by 1:30 pm on 10/5. (3 points)
- Plan of Study: You will follow the guidelines provided by Kate Marrero and submit your completed plan of study in class on 10/19. When complete, this assignment must include any of your current plans for study abroad, internships, co-ops, research, and any additional academic endeavors (minors, pre-med, certificate of entrepreneurship, etc.). This assignment will be kept in your file in the advising office for reference in academic advising appointments.
- Literature searching and referencing activity: For this activity you will use the Web of Science database to identify at least 4 peer-reviewed journal articles that will help prepare you for the Information Gathering assignment in BME 205 on the topic of hemophilia. You must document your search process including search terms and strategy to narrow search using the worksheet provided on BBL. A brief statement indicating how each reference helps to clarify your understanding of the topic must be included. All references are to be presented in IEEE format with the use of EndNote Web. The template must be used. Failure to submit documents in this format will result in a 2 point reduction in overall score.
- Faculty Profile Summary: You are to research a Weldon faculty member (you may not use any faculty who present to the class). Your written summary should include their areas of research, topics and numbers of publications, graduate thesis, any industry connections, patents, and any other professional information you can glean. You must also cite your sources of information. The summary should be submitted via BBL.
- Senior design abstract peer review activity: This will work a little like the Discussion Board assignment, and will be submitted on the Discussion board thread, except that you will follow the Abstract Review Rubric. It is split into two parts:

- O PART A: You will work in assigned teams to peer evaluate the 2015-2016 BME senior design abstracts. For this activity you will employ a peer review process used by the scientific community for journal article reviews. For the peer review you will rate the abstract according to the rubric provided and write a substantive explanation of each rating. Your review may also include constructive commentary for the authors.
- PART B: Individually, you will provide a second constructive review of a different abstract. You must not review the team review already completed until you have completed your own review. Once you have posted your review on the thread in BBL, you must provide a follow-up comment on the BBL discussion thread about the differences and similarities between your own review and the team review. Your reviews will be submitted to the authors of each of the Senior Design abstracts.

Extra Credit: Opportunities for extra credit will be available throughout the semester. You can only collect a total of 10 extra credit points to apply to your final grade. Some standing opportunities include:

- Attending 2 BMES events throughout the semester will earn 3 points. (Either sign in with your name and BME 295, or if there is no sign-in, take a selfie with proof of the event in the background and email it to Matt Pharris with the subject "BME 295 Extra Credit" be sure to include your name and the name and date of the event.)
- Attending 3 BMES events throughout the semester will earn a total of 5 points.
- Attending a minimum of 2 company seminars on 9/14 will make up the 2 daily attendance points for not attending class. (You must sign in with your name and BME 295 to prove attendance.) Every additional company seminar will earn an extra point up to 5 possible points for the day.

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