Office of the Registrar
FORM 40 REV. 12/03

PURDUE UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF A COURSE

1-05

Graduate Council Document No. 06-10a

DEPARTMENT Biomedical Engineering

EFFECTIVE SESSION Spring ~~2005~~ 2007

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

✓	1. New course with supporting documents		7. Change in course attributes
	2. Add existing course offered at another campus		8. Change in instructional hours
	3. Expiration of a course		9. Change in course description
	4. Change in course number		10. Change in course requisites
	5. Change in course title		11. Change in semesters offered
	6. Change in course credit/type		

PROPOSED:		EXISTING:	
Subject Abbreviation	BME	Subject Abbreviation	~~BME~~
Course Number	528	Course Number	~~595T~~

TERMS OFFERED
Check All That Apply:
Summer ☐ Fall ☐ Spring ✓

CAMPUS(ES) INVOLVED

Calumet		Fort Wayne	
Indianapolis		N. Central	
W.Lafayette	✓	Cont Ed	
Tech Statewide			

Long Title: Measurement and Stimulation of the Nervous System

Short Title: Meas + Stimul Nerv Sys

Abbreviated title will be entered by the Office of the Registrar if omitted. (22 CHARACTERS ONLY)

CREDIT TYPE

1. Fixed Credit: Cr. Hrs. 3.0
2. Variable Credit Range:
   Minimum Cr. Hrs
   (Check One) To ☐ Or ☐
   Maximum Cr. Hrs
3. Equivalent Credit: Yes ☐ No ☒
4. Thesis Credit: Yes ☐ No ☒

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. Designator Required
6. Special Fees

7. Registration Approval Type
   Department ☐ Instructor ☐
8. Variable Title
9. Remedial
10. Honors
11. Full Time Privilege
12. Off Campus Experience

Instructional Type	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated	Delivery Method (Asyn. Or Syn.)	Delivery Medium(Audio, Internet, Live, Text-Based, Video)
Lecture	50	3	16	100%		
Recitation						
·sentation						
ɔoratory						
Lab Prep						
Studio						
Distance						
Clinic						
Experiential						
Research						
Ind. Study						
Pract/Observ						

Cross Listed Courses

ECE 528

COURSE DESCRIPTION (INCLUDE REQUISITES):

Prerequisites: ECE 301 ~~ECE~~ and 302, or ~~Permission~~ consent of ~~the~~ instructor~~, required. (Prof. T. Talavage)~~

Engineering principles ~~to~~ address questions of clinical significance in the nervous system: neuroanatomy, fundamental properties of excitable tissues, hearing, vision, motor function, electrical and magnetic stimulation, functional neuroimaging, disorders of the nervous system, development and refinement of sensory prostheses. ~~(This course is cross listed with ECE 528)~~

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Professor Talavage.

Calumet Undergrad Curriculum Committee	Date	Calumet Department Head	Date	Calumet School Dean	Date
Fort Wayne Department Head	Date	Fort Wayne School Dean	Date	Fort Wayne Chancellor	Date
				Robert E Montgomery	1/26/06
Indianapolis Department Head	Date	Indianapolis School Dean	Date	Undergrad Curriculum Committee	Date
				APPROVED 4/27/06	
North Central Department Head	Date	North Central Chancellor	Date	Date Approved by Graduate Council	
Lyle R Wochuba	1/24/06		1/25/06	Marilyn R. Hecht	7/12/06
West Lafayette Department Head	Date	West Lafayette School Dean	Date	Graduate Council Secretary	Date
Yaoshwan Lan	4/27/06				
Graduate Area Committee Convener	Date	Graduate Dean	Date	West Lafayette Registrar	Date
					7/19/06

OFFICE OF THE REGISTRAR

TO: The Engineering Faculty
FROM: Weldon School of Biomedical Engineering
RE: New Dual Level Course Number

The Weldon School of Biomedical Engineering has approved the following new course in BME to be cross listed with existing course ECE 528. This action is now submitted to the Engineering Faculty with a recommendation for approval.

BME 528 Measurement and Stimulation of the Nervous System
Sem. 2. Class 3, cr. 3. Prerequisite: ECE 301, ECE 302 or permission of the instructor.

Engineering principles addressing questions of clinical significance in the nervous system: Neuroanatomy, fundamental properties of excitable tissues, hearing, vision, motor function, electrical and magnetic stimulation, functional neuroimaging, disorders of the nervous system, development and refinement of sensory prostheses.

Reason:
This course will serve as the capstone for undergraduates in both BME and ECE who desire a bioelectrical focus, and as an entry course for graduate students who wish to pursue research that benefits from knowledge in the areas of neural prostheses or neuroimaging. This course is currently offered as ECE 528.

George R. Wodicka
Professor and Head

APPROVED FOR THE FACULTY
OF THE SCHOOLS OF ENGINEERING
BY THE COMMITTEE ON
FACULTY RELATIONS

CFR Minutes 1012

Date 10-21-05

Chairman CFR Robert E. Montgomery

BME 528 Measurement and Stimulation of the Nervous System

Supporting Documentation:

Person-In-Charge: Thomas Talavage

Level: Dual Level

Credit: 3

Course Objective: As current technologies enable more extensive interfacing of man-made devices with biological systems, potential exists for development of advanced neural prostheses to repair or replace lost neural function in a human population. Understanding of the human central nervous system brought about by the past combination of neuroscience and engineering has enabled development of current and pending neural protheses for audition, vision and motor functions. Future developments will be shaped by multi-disciplinary teams that utilize traditional neurophysiologic study (e.g., electrophysiology, neuroimaging) with modern engineering technologies (e.g., MEMS). Students in this course will be exposed to both perspectives and demonstrate the integration thereof through a group research proposal related to enhancing our ability to repair or replace function in the impaired nervous system.

Course Outline:

Topics	Weeks
• Overview of the nervous system; basic neuroanatomy	1
• Neurophysiology (cellular models; stochastic operation)	2
• Overview of neural systems	2
• Student presentations on nervous system measurement and stimulation	2
• Operation, measurement and correction of visual system	2
• Operation, measurement and correction of auditory system	2
• Operation, measurement and correction of motor system	2
• Student research paper presentations	2

Required Text:

J Nolte, The Human Brain: An Introduction to Its Functional Anatomy, 5th Edition, Mosby, Inc., 2002. (ISBN: 0-323-01320-1)

Recommended References:

1) TF Weiss, Cellular Biophysics (Volume 2): Electrical Properties, 1st Edition, MIT Press, 1995. (ISBN: 0-262-23184-0)
2) PE Roland, Brain Activation, 1st Edition, John Wiley & Sons, Inc., 1997. (ISBN: 0-471-18441-1)
3) WW Orrison, Jr., JD Lewine, JA Sanders, MF Hartshorne, Functional Brain Imaging, 1st Edition, Mosby-Year Book, 1994. (ISBN: 0-8151-6509-9)