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

**DEPARTMENT**: Biomedical Engineering

**EFFECTIVE SESSION**: Spring 2007

**GRADUATE COUNCIL DOCUMENT NO.**: 06-10a

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

1. New course with supporting documents
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

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**PROPOSED:**

<table>
<thead>
<tr>
<th>Subject Abbreviation</th>
<th>BME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Number</td>
<td>528</td>
</tr>
<tr>
<td>Long Title</td>
<td>Measurement and Stimulation of the Nervous System</td>
</tr>
<tr>
<td>Short Title</td>
<td><strong>M&amp;Stim Nerv Sys</strong></td>
</tr>
</tbody>
</table>

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

**CREDITS TYPE**

1. Fixed Credit Cr. Hrs: 3.0
2. Variable Credit Range: Minimum Cr. Hrs: 0 or (Check One) To: Maximum Cr. Hrs: 3
3. Equivalent Credit: Yes No [X]
4. Thesis Credit: Yes No [X]

**COURSE ATTRIBUTES**

1. Pass/No Pass Only
2. Satisfactory/Unsatisfactory Only
3. Repeatable
4. Maximum Repeatable Credit:
5. Designator Required
6. Special Fees

**TERMS OFFERED**

Check All That Apply: Summer Fall Spring [X]

**CAMPUS(ES) INVOLVED**

Calumet Indianapolis Fort Wayne W. Lafayette Tech Statewide Cont Ed

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**INSTRUCTIONAL TYPE**

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Minutes</th>
<th>Meetings</th>
<th>Weeks</th>
<th>% of Credit Allocated</th>
<th>Delivery Method (Asyn. Or Syn.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>Per Mg</td>
<td>3</td>
<td>16</td>
<td>100%</td>
<td>Delivery Medium/Audio, Internet, Live, Text-Based, Video</td>
</tr>
</tbody>
</table>

**RECEIPTED**

**Professor Talavage.**

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**COURSE DESCRIPTION (INCLUDE REQUISITES)**

Prerequisites: ECE 301, ECE 302, or permission 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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**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 __________
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 prostheses 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:

<table>
<thead>
<tr>
<th>Topics</th>
<th>Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview of the nervous system; basic neuroanatomy</td>
<td>1</td>
</tr>
<tr>
<td>Neurophysiology (cellular models; stochastic operation)</td>
<td>2</td>
</tr>
<tr>
<td>Overview of neural systems</td>
<td>2</td>
</tr>
<tr>
<td>Student presentations on nervous system measurement and stimulation</td>
<td>2</td>
</tr>
<tr>
<td>Operation, measurement and correction of visual system</td>
<td>2</td>
</tr>
<tr>
<td>Operation, measurement and correction of auditory system</td>
<td>2</td>
</tr>
<tr>
<td>Operation, measurement and correction of motor system</td>
<td>2</td>
</tr>
<tr>
<td>Student research paper presentations</td>
<td>2</td>
</tr>
</tbody>
</table>
Required Text:


Recommended References:
