# Request for Addition, Deletion, or Revision of a Course

**Department:** Biomedical Engineering  
**Date Submitted:** 9/4/02  
**Date Effective:** 9/1/03

## INSTRUCTIONS:

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

### PURPOSE

1. Deletion of a course  
2. New course with supporting documents  
3. Add existing course offered at another campus  
4. Change in course number at same level  
5. Downgrading of course level  
6. Upgrading of course level  
7. Change in course title  
8. Change in semesters offered  
9. Change in course credit type  
10. Change in course credit attributes  
11. Change in instructional hours  
12. Change in prerequisites  
13. Change in description of course content  
14. Transfer of course from one dept. to another

## EXISTING:

<table>
<thead>
<tr>
<th>Subject Abbreviation</th>
<th>BME</th>
<th>Course Number</th>
<th>595</th>
<th>Proposed Title</th>
<th>Problems in the Measurement of Physiological Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable Title</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td>Abbreviated Title</td>
<td>Prblm Meas Phys Events (22 CHARACTERS ONLY)</td>
</tr>
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</table>

## Proposed:

<table>
<thead>
<tr>
<th>Subject Abbreviation</th>
<th>BME</th>
<th>Course Number</th>
<th>522</th>
</tr>
</thead>
</table>

## SEMESTERS OFFERED

Check All That Apply:  
- Summer  
- Fall  
- Winter  
- Spring

## CROSS LISTED COURSES

<table>
<thead>
<tr>
<th>ECE</th>
<th>522</th>
</tr>
</thead>
</table>

## CREDIT TYPE

1. Fixed Credit:  4 Cr. Hrs.  
2. Variable Credit Range:  Minimum Cr. Hrs: (Check One)  
   - Or  
   - Maximum Cr. Hrs.  
3. Equivalent Credit:  Yes No  
4. Thesis Credit:  Yes No  
5. Course Attributes:  
   - Pass/Not Pass Only  
   - Repeatable for Credit  
   - Available for Credit by Examination  
   - Designator Required  
   - Special Fees  
   - Approval Required for Enrollment  
   - Department  
   - Instructor

## INSTRUCTIONAL (PREREQUISITES INCLUDED):

### COURSE DESCRIPTION:

Lectures devoted to the methods used to measure physiological events with demonstrations and laboratory exercises to emphasize the practical aspects of quantitative measurements on living subjects. The systems covered are cardiovascular, respiratory, and central peripheral nervous.

Consent of Instructor required

## CAMPUS(ES) INVOLVED

- Calumet
- Fort Wayne
- Indianapolis
- North Central
- West Lafayette
- Off Campus

## OFFICE OF THE REGISTRAR

[Signatures and dates for approval and approval by Council]
TO: The Engineering Faculty  
FROM: Department of Biomedical Engineering  
RE: New Graduate-Level Course

The Department of Biomedical Engineering has approved the following new course. Approval of the Faculty of the Schools of Engineering is requested.

BME 522 Problems in Measurement of Physiological Events

A. Course Description

Sem. 2. Class 2, Lab 4, cr. 4.

Prerequisites: Consent of instructor

Lectures devoted to the methods used to measure physiological events with demonstrations and laboratory exercises to emphasize the practical aspects of quantitative measurements on living subjects. The systems covered are cardiovascular, respiratory, and central peripheral nervous.

B. Reason: This course has been offered twice with an experimental number within the BME department and has been previously offered from the School of Electrical and Computer Engineering as ECE 522 for more than 10 years.

This is BME’s only laboratory course on the fundamentals of measurement principles for physiological events. The contents are applicable to a broad class of biomedical measurements systems, at several levels (molecular, cellular, and systems).

The course was offered in Spring 2001, Spring 2002 and Spring 2003 with 16, 13, and 15 students respectively. Spring 2001 had 15 undergraduate students and 1 graduate student, Spring 2002 has 8 undergraduate students and 5 graduate students and Spring 2003 has 11 undergraduate students and 4 graduate students.

George R. Wodicka  
Head and Professor  
Department of Biomedical Engineering

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

CFR Minutes 972  
Date 4/5/03  
Chairman CFR
Supporting Documentation:

Course Instructor: Ann Rundell

Offered: Spring Semester

Course Objective: A student who successfully fulfills the course requirements will have demonstrated an understanding of the criteria for faithful reproduction of physiological events, an ability to conduct experiments in the laboratory to obtain, observe, and report physiological events, an understanding of the cardiovascular system in terms of the cardiac muscle, electrical signals, cycle and output, an ability to utilize bioelectrodes for stimulation and recording purposes, and an understanding of the mechanism of information communication employed by the nervous system.

Student Population: The course is designed to be dual level for graduate students and advanced undergraduates interested in biomedical engineering.

Course Content:

Syllabus

<table>
<thead>
<tr>
<th>Topic</th>
<th>Lecture</th>
<th>Lab(4hr)</th>
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</thead>
<tbody>
<tr>
<td>Criteria for the Faithful Reproduction of Physiological Events (Analog and Digital)</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Bandwidth of Bioinstrumentation systems and Frequency</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Content of Signals</td>
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<td></td>
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<tr>
<td>Bioelectric Amplifiers</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Properties of Bioelectrodes</td>
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<td>2</td>
</tr>
<tr>
<td>Stimulation of Excitable Tissue</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Nerve Propagation</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Origin of ECG</td>
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<td>1</td>
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<tr>
<td>Properties of the Cardiac Muscle</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>The Cardiac Cycle</td>
<td>2</td>
<td>1/3</td>
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<tr>
<td>Cardiac Output</td>
<td>1</td>
<td>1/3</td>
</tr>
<tr>
<td>Pacing, Fibrillation, Defibrillation, ICDs</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Measurement and Regulation of Blood Pressure</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Anesthesia</td>
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<td>1/3</td>
</tr>
<tr>
<td>Pulmonary System</td>
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<td>1</td>
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<tr>
<td>Electrical Safety</td>
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<tr>
<td>Total</td>
<td>26</td>
<td>13</td>
</tr>
</tbody>
</table>

Remaining hours are used for examinations and record review and analysis