California State University Channel Islands

NEW COURSE PROPOSAL

Courses must be submitted by November 2, 2009, for priority catalog review.

DATE (*Change if modified and redate file with current date)*) 10-1-09; REV 12.8.09
PROGRAM AREA(S) BIOLOGY

1. Course Information. *[Follow accepted catalog format.]*

Prefix(es) (Add additional prefixes if cross-listed) **and Course No. BME 502**
Title: BIOMEDICAL INSTRUMENTATION AND DEVICES: TECHNOLOGY AND APPLICATIONS
Units: 3
x Prerequisites MATH 150; PHYS 200 and 201 or PHYS 315 or BIOL/PHYS 434
Corequisites
Consent of Instructor Required for Enrollment

Catalog Description (Do not use any symbols): **C**overs biosignaling processes, instrumentation and devices in measuring, recording, monitoring and diagnosis, modern medical imaging analysis systems, nanodevices, therapeutics, and design and development principles of instruments and devices for diagnostics and therapeutics.

Grading Scheme:
x A-F Grades
Credit/No Credit
Optional (Student Choice)

Repeatability:
Repeatable for a maximum of units
Total Completions Allowed
Multiple Enrollment in Same Semester

Course Level Information:
Undergraduate
Post-Baccalaureate/Credential
x Graduate

Mode of Instruction/Components (*Hours per Unit are defaulted*).

	Units	Hours per Unit	Benchmark Enrollment	Graded Component	CS & HEGIS # (Filled in by the Dean)
Lecture	2	1	20	x	
Seminar		1			
Laboratory	1	3	20	x	
Activity		2			
Field Studies					
Indep Study					
Other Blank					

Leave the following hours per week areas blank. The hours per week will be filled out for you.
2 hours lecture per week
3 hours laboratory per week

2. Course Attributes:

General Education Categories: All courses with GE category notations (including deletions) must be submitted to the GE website: http://summit.csuci.edu/geapproval. Upon completion, the GE Committee will forward your documents to the Curriculum Committee for further processing.

A (English Language, Communication, Critical Thinking)
A-1 Oral Communication
A-2 English Writing
A-3 Critical Thinking

B (Mathematics, Sciences & Technology)
B-1 Physical Sciences
B-2 Life Sciences – Biology
B-3 Mathematics – Mathematics and Applications
B-4 Computers and Information Technology

C (Fine Arts, Literature, Languages & Cultures)

C-1 Art
C-2 Literature Courses
C-3a Language
C-3b Multicultural
D (Social Perspectives)
E (Human Psychological and Physiological Perspectives)
UDIGE/INTD Interdisciplinary
Meets University Writing Requirement
Meets University Language Requirement

American Institutions, Title V Section 40404: Government US Constitution US History
Refer to website, Exec Order 405, for more information: http://senate.csuci.edu/comm/curriculum/resources.htm
Service Learning Course (Approval from the Center for Community Engagement must be received before you can request this course attribute).

3. Justification and Requirements for the Course. (Make a brief statement to justify the need for the course)

A. Justification: This is a required course for the MS Biotechnology with an Emphasis in Biomedical Engineering program.

B. Degree Requirement: x Requirement for the Major/Minor
Elective for the Major/Minor
Free Elective

Note: Submit Program Modification if this course changes your program.

4. Learning Objectives. (*List in numerical order. You may wish to use the following resource in utilizing measurable verbs: http://senate.csuci.edu/comm/curriculum/resources.htm*)

Upon completion of the course, the student will be able to:
Demonstrate an understanding of the biosignaling processes
Summarize the functions of measuring, recording and monitoring instruments
Compare the functions and utilities of modern imaging instruments and identify their advantages and limitations
Compare the functions and utilities of therapeutic devices and identify their advantages and limitations

5. Course Content in Outline Form. *[Be as brief as possible, but use as much space as necessary]*
Overview of human anatomy and physiology
Fundamentals of medical instrumentation
Bioelectric signaling processes
Measuring instruments
Recording instruments
Monitoring instruments
Modern Imaging systems
Therapeutic devices

Does this course content overlap with a course offered in your academic program? **Yes** **No** x
If YES, what course(s) and provide a justification of the overlap.

Does this course content overlap a course offered in another academic area? **Yes** **No** x
If YES, what course(s) and provide a justification of the overlap.

Overlapping courses require Chairs' signatures.

6. Cross-listed Courses (*Please note each prefix in item No. 1)*

A. List Cross-listed Courses (Signature of Academic Chair(s) of the other academic area(s) is required).
List each cross-listed prefix for the course:

B. Program responsible for staffing: Biology

7. References. *[Provide 3 - 5 references]*

- Biomedical Instrumentation: Technology and Applications **by** R. Khandpur, Publisher: McGraw-Hill Professional; 1 edition, 2004, ISBN-10: 0071447849
- Advanced Biosignal Processing, by Amine Nait-Ali, Publisher: Springer, 2009, ISBN-10: 3540895051
- Biomedical Device Technology: Principles And Design by Anthony Y. K. Chan Publisher: Charles C. Thomas, Publisher; 1 edition, 2007, ISBN-10: 0398076995

8. Tenure Track Faculty Qualified to Teach This Course.

Biology and physics faculty

9. Requested Effective Date:
First semester offered: S2010

10. New Resources Requested. Yes **No** x
If YES, list the resources needed.

A. Computer Needs (data processing, audio visual, broadcasting, other equipment, etc.)

B. Library Needs (streaming media, video hosting, databases, exhibit space, etc.)

C. Facility/Space/Transportation Needs

D. Lab Fee Requested (please refer to Dean's Office for additional processing) **Yes** **No** x

E. Other

11. Will this new course alter any degree, credential, certificate, or minor in your program? Yes x **No**
If, YES attach a program update or program modification form for all programs affected.
Priority deadline for New Minors and Programs: October 5, 2009 of preceding year.
Priority deadline for Course Proposals and Modifications: November 2, 2009, of preceding year.
Last day to submit forms to be considered during the current academic year: April 15th.

Ching-Hua Wang 10-1-09

Proposer of Course (Type in name. Signatures will be collected after Curriculum approval) Date

Approval Sheet

Program/Course:
If your course has a General Education Component or involves Center affiliation, the Center will also sign off during the approval process.

Multiple Chair fields are available for cross-listed courses.

Program Chair		
	Signature	Date
Program Chair		
	Signature	Date
Program Chair		
	Signature	Date
General Education Chair		
	Signature	Date
Center for International Affairs Director		
	Signature	Date
Center for Integrative Studies Director		
	Signature	Date
Center for Multicultural Engagement Director		
	Signature	Date
Center for Civic Engagement Director		
	Signature	Date
Curriculum Chair		
	Signature	Date
Dean of Faculty		
	Signature	Date