CALIFORNIA STATE UNIVERSITY CHANNEL ISLANDS

NEW COURSE PROPOSAL

DATE: FEBRUARY 16, 2006
PROGRAM AREA PHYSICS AND PERFORMING ARTS

1. Catalog Description of the Course. *[Follow accepted catalog format.]*

Prefix PHYS **Course#** 436 **Title** Physics of the Performing Arts **Units** (3)
3 **hours** Lecture **per week**
☒ **Prerequisites** PA 202
☐ **Corequisites**
Description
PHYS 436
Introduction to the physics of movement, lighting, sound and visual/aural perception. The course emphasizes factors that permit the performance artists to understand and more fully control their performance, with special attention to the study of audience perception. Demonstrations, experiments and video/computer simulations are used to analyze signals received by the performer and the audience. Same as PA 436.

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	Graded	
☒ **Gen Ed**	☐ **CR/NC**	☐ **Repeatable for up to units**
Categories B1, UDIGE		
☐ **Lab Fee Required**	☒ **A - F**	**Total Completions Allowed**
	☐ **Optional (Student's choice)**	☐ **Multiple Enrollment in same semester**

2. Mode of Instruction.

	Units	Hours per Unit	Benchmark Enrollment	Graded Component	CS # (filled in by Dean)
Lecture	3	1	30	☒	
Seminar				☐	
Laboratory				☐	
Activity				☐	

3. Justification and Learning Objectives for the Course. (Indicate whether required or elective, and whether it meets University Writing, and/or Language requirements) *[Use as much space as necessary]*
Justification: This is a required course for the BA in Performing Arts. The emphasis in this course is on developing the student's control of his/her performance through a greater understanding of the physics involved in movement, lighting, sound, and performer/audience perception. Attention will be given to study of the signals received by the performer and the audience. Physics and stage movement represent remarkably complementary approaches to human body movement - the scientific approach of classical mechanics, and the aesthetic approach of the popular art forms of dance and theatre. We will also study the nature of light and optical phenomena, the perception and psychology of color, and the reproduction of color in different media; survey lighting design for theatre, film, and television; cover the basic theory of sound and music for students interested in music, speech and language--extensive use of demonstrations and sound analysis computer programs will be used to accomplish these objectives. Additional topics covered include basic psychoacoustics and digital audio theory.

Learning Objectives:
Upon completion of this course students will be able to:
(Press enter for the next bulleted item)

- Systematically and empirically explore the physics of movement, lighting, sounds, and perception.

• Will demonstrate, in writing, performance and discussion, an understanding of the way the laws of physics interact with performance and reception.
• Demonstrate, through oral presentation or performance, an understanding of the course content and an ability to convey that understanding to an audience of his or her peers.
* Describe how the laws of gravity, momentum, and energy affect moving human bodies.
* Analyze stage movement as an art form with emphasis on space, time and energy in motion as elements in choreographic style. The concepts and theories of the Laban movement analysis method of observing, recording, and analyzing human body movement.

4. Is this a General Education Course **YES** ☒ **NO** ☐
If Yes, indicate GE category and attach GE Criteria Form:

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)	☐
UD Interdisciplinary	☒

5. Course Content in Outline Form. *[Be as brief as possible, but use as much space as necessary]*
(Press enter for the next bulleted item)

Introduction to the physics of movement, lighting, sound, and perception.
Physical Elements of Performer and Audience Perception and Communication
Analytical Project Development

The nature of light and optical phenomena, the perception and psychology of color, the reproduction of color in different media.

Basic theory of sound and music for students interested in music, speech and language. Extensive use of demonstrations and sound analysis computer programs will be used to accomplish these objectives.

Basic musical literacy: Fundamentals of music, including notation, rhythm, major and minor scales, intervals, tonality, triads.

The theory and techniques of electronic and computer composition: topics include basic electronics and acoustics, synthesizer modules, and the use of appropriate music software.

An introduction to the theory and practice of manipulating digital sound.

Basic psychoacoustics and digital audio theory.

How laws of gravity, momentum, and energy affect moving human bodies.

An analysis of dance as an art form with emphasis on space, time and energy in motion as elements in choreographic style. The concepts and theories of the Laban movement analysis method of observing, recording, and analyzing human body movement.

Does this course overlap a course offered in your academic program? YES ☐ NO ☒
If YES, what course(s) and provide a justification of the overlap?

Does this course overlap a course offered in another academic area? YES ☐ NO ☒
If YES, what course(s) and provide a justification of the overlap?
Signature of Academic Chair of the other academic area is required on the consultation sheet below.

6. Cross-listed Courses (Please fill out separate form for each PREFIX)

List Cross-listed Courses
PHYS 436: Physics of the Performing Arts
Signature of Academic Chair(s) of the other academic area(s) is required on the consultation sheet below

Department responsible for staffing: PA/PHYS

7. References. *[Provide 3 - 5 references on which this course is based and/or support it.]*
(Press enter for the next number)

1. Physics and the Art of Dance: Understanding Movement. Kenneth Laws, Martha Swope. Oxford University Press (February 1, 2002)
2. Theatre Sound. John A. Leonard. Routledge (July, 2001)
3. Light Fantastic: The Art and Design of Stage Lighting. Max Keller, Johannes Weiss. Prestel Publishing (September 1, 1999)
4. Theatre Audiences: A Theory of Production and Reception, 2nd Ed. Susan Bennett. Routledge (February 1, 1998)

8. List Faculty Qualified to Teach This Course.

Geoff Dougherty, others TBD

9. Frequency.

a. Projected semesters to be offered: Fall ☐ Spring ☒ Summer ☐

10. New Resources Required. YES ☐ NO ☒

If YES, list the resources needed and obtain signatures from the appropriate programs/units on the consultation sheet below.

a. Computer (data processing), audio visual, broadcasting needs, other equipment)

b. Library needs

c. Facility/space needs

11. Will this new course alter any degree, credential, certificate, or minor in your program? YES ☐ NO ☐

If, YES attach a program modification form for all programs affected.

Geoff Dougherty and Jacquelyn Kilpatrick — Proposer of Course

11-1-05 — Date

Approvals

_____

Program Chair Date

_____

General Education Committee Chair Date

_____

Curriculum Committee Chair Date

_____

Dean Date

GE CRITERIA APPROVAL FORM

Course Number and Title: **PHYS 436: Physics of the Performing Arts (3)**
Faculty Member(s) Proposing Course: Geoff Dougherty and Jacquelyn Kilpatrick

Indicate which of the following categories would be satisfied by this course by marking an "X" on the appropriate lines.
Courses may be placed in up to two GE categories as appropriate. Upper Division Interdisciplinary GE courses may be placed in two categories plus the UDIGE category.

	A1: Oral Communication
	A2: English Writing
	A3: Critical Thinking
X	B1: Physical Sciences
	B2: Life Sciences
	B3: Mathematics
	B4: Computers and Technology
	C1: Fine Arts
	C2: Literature
	C3: Languages & Cultures
	D: Social Perspectives
	E: Human Psychological & Physiological Perspectives
X	Upper Division Interdisciplinary GE

Lab Included? Yes _____ No __x____

Please provide a brief explanation of how the proposed course meets <u>each</u> of the criteria for the selected General Education categories.

1. B1: . . . presentation and evaluation of evidence and argument, the appreciation of us/misuse of data, and the organization of information in quantitative, technological, or other formal systems. Students are introduced to the principles and practices that underscore mathematical and scientific inquiry . . . and gain an understanding of the process by which new knowledge is created, organized accessed, and synthesized. Students improve their reasoning skills . . . and apply information and technology to the understanding of complex and diverse problems. . . . They become aware of the influence and significance of mathematics and the sciences in world civilization.

1. C1: . . . enable students to develop a basic appreciation of the human imagination and understand the value of personal creativity in a complex, global society . . . exposure to a diverse range of work in art, literature, languages and cultures cultivates the student's ability to express intellectual and emotional responses and make subjective and objective evaluations. . . . stresses the interrelationship between individual aesthetics and collective human sensibility. Numerous teaching methodologies involve active participation in the creative experience, leading to personal inquiries into the cultural diversity prevalent in the visual, audible, kinetic, and oral traditions of human expressions.

2. Upper division interdisciplinary. Emphasize interdisciplinarity by integrating content, ideas, and approaches from two or more disciplines. . . . Include substantive written work consisting of in-class writing as well as outside class writing of revised prose.

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Basic psychoacoustics and digital audio theory.

Introduction to the physics of movement, lighting, sound, and perception.

Physical Elements of Performer and Audience Perception and Communication
Analytical Project Development

The nature of light and optical phenomena, the perception and psychology of color, the reproduction of color in different media.

A survey of lighting design for theatre, film, and television. The creation and execution of a lighting design.

Basic theory of sound and music for students interested in music, speech and language. Extensive use of demonstrations and sound analysis computer programs will be used to accomplish these objectives.

The theory and techniques of electronic and computer composition: topics include basic electronics and acoustics, synthesizer modules, and the use of appropriate music software.

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