Office of the Registrar
FORM 40 REV. 11/09

PURDUE UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION,
OR REVISION OF AN UNDERGRADUATE COURSE
(10000-40000 LEVEL)

Print Form

EFD 66-10

DEPARTMENT School of Electrical and Computer Engineering (EFD 66-10) EFFECTIVE SESSION Fall 2011 20120

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

- [X] 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 (department head signature only)
- [ ] 8. Change in instructional hours
- [ ] 9. Change in course description
- [ ] 10. Change in course requisites
- [ ] 11. Change in semesters offered (department head signature only)
- [ ] 12. Transfer from one department to another

PROPOSED:		EXISTING:	
Subject Abbreviation	ECE	Subject Abbreviation	
Course Number	40020	Course Number	
Long Title	Sound Reinforcement System Design		
Short Title	Sound Reinforcement Sys Design		

Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)

TERMS OFFERED
Check All That Apply:
[ ] Summer [X] Fall [ ] Spring

CAMPUS(ES) INVOLVED
[ ] Calumet [ ] N. Central
[ ] Cont Ed [ ] Tech Statewide
[ ] Ft. Wayne [X] W. Lafayette
[ ] Indianapolis

CREDIT TYPE
1. Fixed Credit: Cr. Hrs. 3
2. Variable Credit Range: Minimum Cr. Hrs ____ (Check One) To [ ] Or [ ] Maximum Cr. Hrs. ____
3. Equivalent 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. Special Fees [ ]
6. Registration Approval Type Department [ ] Instructor [ ]
7. Variable Title [ ]
8. Honors [ ]
9. Full Time Privilege [ ]
10. Off Campus Experience [ ]

ScheduleType	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated
Lecture	50	3	16	100
Recitation				
Presentation				
Laboratory				
Lab Prep				
Studio				
Distance				
Clinic				
Experiential				
Research				
Ind. Study				
Pract/Observ				

Cross-Listed Courses

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2011 AUG -9 AM 9:49
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COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):

See attachment.

*COURSE LEARNING OUTCOMES:

See attachment.

Calumet Department Head	Date	Calumet School Dean	Date
Fort Wayne Department Head	Date	Fort Wayne School Dean	Date
Indianapolis Department Head	Date	Indianapolis School Dean	Date
North Central Department Head	Date	North Central Chancellor	Date
West Lafayette Department Head 2/15/11	Date	West Lafayette College/School Dean 7/25/11	Date
		West Lafayette Registrar 8/11/11	Date

OFFICE OF THE REGISTRAR

ECE 40020

Engineering Faculty Document No. 66-10
February 14, 2011

TO: The Faculty of the College of Engineering

FROM: The Faculty of the School of Electrical and Computer Engineering

RE: New Undergraduate Course: ECE 40020 Sound Reinforcement System Design

The faculty of the School of Electrical and Computer Engineering has approved the following new course. This action is now submitted to the Engineering Faculty with a recommendation for approval.

ECE 40020 Sound Reinforcement System Design
Sem. Fall, Cr. 3, Lecture 3.
Prerequisites: ECE 25500 and (ECE 30100 [may be taken concurrently])
Restrictions: Must be enrolled in one of the following Majors: Electrical Engineering, Interdisciplinary Engineering
Description: An introduction to computational tools used in the measurement and analysis of electro-acoustic systems, and their application to sound reinforcement system engineering. Service learning based projects, serving the needs of community clients, provides the context for application of sound reinforcement system design principles and practices.

Reason: This course has been offered as ECE 49500 in Fall 2006 (6 students), Fall 2007 (6), Fall 2008 (9), Fall 2009 (12), Fall 2010 (12), and will be offered in Fall 2011. This course is for students with an interest in sound system design and provides them with the opportunity to gain first-hand experience with industry standard computer-based tools.

Jeffrey L. Krause
on behalf of V. Balakrishnan, Head
School of Electrical and Computer Engineering

APPROVED FOR THE FACULTY
OF THE SCHOOLS OF ENGINEERING
BY THE ENGINEERING
CURRICULUM COMMITTEE
ECC Minutes #17
Date 4-20-11
Chairman ECC R Cipra

ECE 40020

Supporting Documentation EFD 66-10

ECE 40020 - Sound Reinforcement System Design

Lecture Hours: 3.0 Credits: 3.0

Requisites: ECE 25500 and (ECE 30100 [may be taken concurrently])

Requisites by Topic: Basic electronic components and circuit design principles Concurrent Prerequisites: Basic understanding of signals and systems

Catalog Description:
An introduction to computational tools used in the measurement and analysis of electro-acoustic systems, and their application to sound reinforcement system engineering. Service learning based projects, serving the needs of community clients, provide the context for application of sound reinforcement system design principles and practices.

Required Text(s):

1. *Sound Systems: Design and Optimization*, 2nd Edition, Bob McCarthy, Focal Press, 2009, ISBN No. 9780240521565.

Recommended Text(s):

1. *Sound System Engineering*, 3 Edition, Don Davis and Eugene Patronis, Focal Press, 2006, ISBN No. 0240808304.

Course Outcomes:

A student who successfully fulfills the course requirements will have demonstrated:

i. an ability to apply knowledge obtained in earlier coursework and to obtain new knowledge necessary to design a sound reinforcement system. [1,2,3,4,5; a,b,c,e,I,j,k]
ii. an understanding of the engineering design process. [4; b,c,e,f,h]
iii. an ability to function on a multidisciplinary team. [6; d,h,j]
iv. an awareness of professional and ethical responsibility. [6; f,h,j]
v. an ability to communicate effectively, in both oral and written form. [6; g]

Assessment Method for Course Outcomes: Outcome Evaluation Instruments Used (i) Sound System Design and EASE Simulation for Assigned Venue (ii) Concept Questions on Midterm and Final Exams (iii) Service Learning Report for Community Client (iv) Essay Questions on Midterm and Final Exams (v) Written Project Report and Presentation Students must demonstrate basic competency in all the course outcomes, listed above, in order to receive a passing grade. Demonstration of Outcome (i) will be based on successful completion of a sound reinforcement design for an assigned venue (e.g., 2000-seat general-purpose auditorium with balcony), for which a minimum score of 60% will be required to establish basic competency (based on technical content and design constraint satisfaction

scores on project report). Demonstration of Outcome (ii) will be based on successful completion of concept questions on the midterm and final exams, for which a minimum score of 60% will be required to establish basic competency. Demonstration of Outcome (iii) will be based on successful completion of an audio-related service learning project for a community client and submission of a written report detailing the work completed, for which a minimum score of 60% will be required to establish basic competency. Demonstration of Outcome (iv) will be based on successful completion of essay questions on the midterm and final exams (that address economic, environmental, ethical, safety, reliability, and social issues associated with sound system design), for which a minimum score of 60% will be required to establish basic competency. Demonstration of Outcome (v) will be based on the written project report (technical writing style score) and oral presentation, for which a minimum score of 60% on each will be required to establish basic competency.

Lecture Outline:

Week(s)	Topics
1	Physics: radiation of sound
3	Sound: transmission, summation, and reception
3	Design: evaluation, prediction, variation, and specification
3	Optimization: examination, verification, and calibration
3	Component selection: loudspeakers, power amplifiers, signal processors, mixing consoles, microphones, racks, wiring
1	Project presentations
1	Demos, design project overview, midterm exam

Engineering Design Content:

Establishment of Objectives and Criteria
Synthesis
Analysis
Testing
Evaluation

Engineering Design Consideration(s):

Economic
Environmental
Ethical
Health/Safety
Social

ECE 40020

Form 40 attachment

School of Electrical and Computer Engineering (EFD 66-10)

Description: An introduction to computational tools used in the measurement and analysis of electro-acoustic systems, and their application to sound reinforcement system engineering. Service learning based projects, serving the needs of community clients, provide the context for application of sound reinforcement system design principles and practices.

Prerequisite: ECE 25500 and (ECE 30100 [may be taken concurrently])

Restrictions: Must be enrolled in one of the following Majors: Electrical Engineering, Interdisciplinary Engineering

Learning Outcomes:

A student who successfully fulfills the course requirements will have demonstrated:

i. an ability to apply knowledge obtained in earlier coursework and to obtain new knowledge necessary to design a sound reinforcement system.
ii. an understanding of the engineering design process.
iii. an ability to function on a multidisciplinary team.
iv. an awareness of professional and ethical responsibility.
v. an ability to communicate effectively, in both oral and written form.