Office of the Registrar
FORM 40G REV. 12/09

PURDUE UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF A GRADUATE COURSE
(50000-60000 LEVEL)

Graduate Council Doc. No. 12-34f
EFD 16-09

DEPARTMENT: Mechanical Engineering
EFFECTIVE SESSION: Spring ~~2013~~ 2014 (201420)

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

- [x] 1. New course with supporting documents (complete proposal form)
- [ ] 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
- [ ] 12. Transfer from one department to another

PROPOSED:		EXISTING:	
Subject Abbreviation	ME	Subject Abbreviation	
Course Number	~~50200~~ 52200	Course Number	
Long Title	Indoor Environmental Analysis & Design		
Short Title	Enviro Analysis/Design ~~&~~ Design		

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

TERMS OFFERED (Check All That Apply)
- [ ] Summer
- [ ] Fall
- [x] Spring

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

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 [X]
4. Thesis Credit: Yes [ ] No [x]

COURSE ATTRIBUTES: Check All That Apply

1. Pass/Not Pass Only	[ ]	6. Registration Approval Type	Department [ ]	Instructor [ ]
2. Satisfactory/Unsatisfactory Only	[ ]	7. Variable Title		[ ]
3. Repeatable	[ ]	8. Honors		[ ]
Maximum Repeatable Credit:	[ ]	9. Full Time Privilege		[ ]
4. Credit by Examination	[ ]	10. Off Campus Experience		[ ]
5. Special Fees	[ ]			

Schedule Type	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated
Lecture	75	2	16	
Recitation				
Presentation				
Laboratory				
Lab Prep				
Studio				
Distance				
Clinic				
Experiential				
Research				
Ind. Study				
Pract/Observ				

Cross-Listed Courses

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COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):

ME 50200 Indoor Environmental Analysis and Design, Sem. 2 (alternate years), Class 3, cr. 3. Prerequisite: ME 31500

Review of current trend of building and indoor environment design. Theory of thermal comfort, indoor air quality, visual comfort, and acoustic comfort. Introduction of experimental techniques and advanced computer tools for indoor environment analysis and design. Professor Chen.

Calumet Department Head	Date	Calumet School Dean	Date	Calumet Undergrad Curriculm Committee	Date
Fort Wayne Department Head	Date	Fort Wayne School Dean	Date	Fort Wayne Chancellor	Date
Indianapolis Department Head	Date	Indianapolis School Dean	Date	Undergrad Curriculm Committee	Date
North Central Faculty Senate Chair	Date	Vice Chancellor for Academic Affairs	Date	APPROVED 2/21/13 Date Approved by Graduate Council	
Anil Bajaj 9/20/12 West Lafayette Department Head	Date	Michael F. Chen 10/3/2012 West Lafayette College/School Dean	Date	Tina L. Payne 2/22/13 Graduate Council Secretary	Date
2/21/13 Graduate Area Committee Convener	Date	Graduate Dean	Date	Sandra Haake 5/2/13 West Lafayette Registrar	Date

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(Grad Form 40G [Excel format] - Does not include the Graduate Council's required supporting document. See pdf version of Form 40G)

5/1/13

ME 52200

Engineering Faculty Document No. 16-09
December 12, 2008

TO: The Engineering Faculty

FROM: The Faculty of the School of Mechanical Engineering

RE: New Course – ME 502 Indoor Environmental Analysis and Design

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

ME 502 Indoor Environmental Analysis and Design
Sem. 2 (alternate years), Class 3, cr. 3
Prerequisite: ME 315

Review of current trend of building and indoor environment design. Theory of thermal comfort, indoor air quality, visual comfort, and acoustic comfort. Introduction of experimental techniques and advanced computer tools for indoor environment analysis and design.

Reason: This course has been taught three times on an experimental basis with the following enrollments: spring 04 – 9 students, spring 06 - 7 students, and spring 2008 – 9 students. This course provides students with the basic theory of thermal comfort, indoor air quality, visual comfort, acoustics comfort and HVAC systems as well as state-of-the-art on indoor environment design. This course will also attract students from architectural engineering.

James D. Jones

James D. Jones, Associate Head/Professor
School of Mechanical Engineering

APPROVED FOR THE FACULTY
OF THE SCHOOLS OF ENGINEERING
BY THE ENGINEERING
CURRICULUM COMMITTEE

ECC Minutes 9/24/12

Date 10/2/12

Chairman ECC

ME 52200
EFD 16-09

Supporting Document for a New Graduate Course

To:	Purdue University Graduate Council		For Reviewer's comments only (Select One) Choose an item.
From:	Faculty Member:	Yan Chen	Reviewer: Click here to enter text.
	Department:	Mechanical Engineering	
	Campus:	West Lafayette	Comments: Click here to enter text.
Date:	7/20/2012		
Subject:	Proposal for New Graduate Course- Documentation Required by the Graduate Council to Accompany Registrar's Form 40G		

Contact for information if questions arise:

Name:	James D. Jones
Phone Number:	494-5691
E-mail:	jonesjd@purdue.edu
Campus Address:	1288 ME/ ME room 2008B

Course Subject Abbreviation and Number:	ME 50200
Course Title:	Indoor Environmental Analysis & Design

A. Justification for the Course:

- This course has been taught two times on an experimental basis with the following enrollments: spring 2010 – 13 students and then in spring 2012 – 19 students. This course teaches students to use computer tools to design a comfortable, healthy and safe building.
- The propsed ME 50200 course is a review of current trend of building and indoor environment design, theory of thermal comfort, indoor air quality and air distribution, introduction of experimental techniques and advanced computer tools for indoor environment analysis and design. The course will be offered in the spring with an anticipated enrollment of 15-20 students.

B. Learning Outcomes and Methods of Evaluation or Assessment:

- Students in this course will: 1) Provide an introduction into and practical examples of indoor environment (1 week), 2) Present the basic theory ofthermal comfort, indoor air quality, visual comfort, acoustics comfort and HVAC systems (4 weeks), 3) Introduce advanced tool to analyze and design indoor environment and energy use in buildings (6 weeks), & 4) Conduct indoor environment analysis and design for a challenging problem (4 weeks).
- There will be a term paper, design project report and presentations.

- 1. Engineering Topics: Engineering Science – 1.5 credits (50%) & Engineering Design – 1.5 credits (50%)
    - **Criteria:**

☐	Exams and Quizzes	☒	Papers and Projects
☐	Homework	☐	Laboratory Exercises
☐	Attendance and Class Participation	☐	Extra Credit Policies

- This course is taught by lecture and covers the program outcomes described in the program map.
    - **Method of Instruction:**

☒	Lecture	☐	Recitation
☐	Presentation	☐	Laboratory
☐	Lab Prep	☐	Studio
☐	Distance	☐	Clinic
☐	Experimental	☐	Research
☐	Ind. Study	☐	Pract/Observe
☐	Seminar		

C. Prerequisite(s):

- Must have taken ME 31500 – Heat and Mass Transfer
- ME 31500 is the only prerequisite needed for this course.

D. Course Instructor(s):

- Qingyan (Yan) Chen, Reilly Professor of Mechanical Engineering
- Is the instructor currently a member of the Graduate Faculty? ☒ Yes ☐ No Click here to enter text.
  (If the answer is no, indicate when it is expected that a request will be submitted.)

E. Course Outline:

- 1.Provide an introduction into indoor environment (1 week), 2. Present the basic theory of psychrometrics, thermal comfort, indoor air quality, visual comfort, acoustics comfort, and HVAC systems (4 weeks), 3. Introduce advanced tools to analyze and design indoor environment and energy use in buildigns (6 weeks), and 4. Conduct indoor environment analysis and design for the challenging problem (4 weeks).

ME 522200
EFD 16-09

F. Reading List (include course text):

- No textbook required, lecture notes handed out in class.
- No textbook required.

G. Library Resources:

- No resources needed.

H. Example of a Course Syllabus:

Week 1: Overview of Indoor Environment

Weeks 2-5: Theory

Weeks 5-10: Tools for Indoor Environment Analysis

Weeks 11-14: Analysis and Design of Indoor Environment

Week 15: Final project presentations

ME 502
INDOOR ENVIRONMENT ANALYSIS AND DESIGN

Course Outcomes

1. Provide an introduction into and practical examples of *indoor environment*.
2. Present the basic theory of *thermal comfort*, *indoor air quality, visual comfort, acoustics comfort* and *HVAC systems.*
3. Introduce *advanced tools* to analyze and design indoor environment.
4. Conduct indoor environment *analysis and design* for a challenging problem.

Overview of Indoor Environment (1 wk)

1. Introduction of indoor environment
2. Examples of indoor environment

Theory (4 wks)

1. Psychrometrics
2. Thermal comfort
3. Indoor air quality
4. Visual and acoustics comfort
5. HVAC systems

Tools for Indoor Environment Analysis (6 wks)

1. Introduction to flow computer programs
2. Governing indoor flow equations
3. Numerical techniques
4. Heat transmission

Analysis and Design of Indoor Environment (4 wks)

1. Analysis
2. Design
3. Project presentation

COURSE NUMBER: ME 502

COURSE TITLE: Indoor Environment Analysis and Design

REQUIRED COURSE OR ELECTIVE COURSE: Elective

TERMS OFFERED: Spring

TEXTBOOK/REQUIRED MATERIAL: None – Lecture notes handed out in class.

PRE-REQUISITES: ME 315 Heat and Mass Transfer

COORDINATING FACULTY: Q. Yan Chen

COURSE DESCRIPTION: Review of current trend of building and indoor environment design. Theory of thermal comfort, indoor air quality, visual comfort, acoustic comfort, and HVAC systems. Introduction of experimental techniques and advanced computer tools for indoor environment analysis and design.

COURSE OUTCOMES:

1. Provide an *introduction* into indoor environment.
2. Present the *basic theory* of psychrometrics, thermal comfort, indoor air quality, visual comfort, acoustics comfort, and HVAC systems.
3. Introduce *advanced tools* to analyze and design indoor environment.
4. Conduct indoor environment *analysis and design* for a challenging problem.

ASSESSMENTS TOOLS:

1. Term paper.
2. Design project report.
3. Presentations.

PROFESSIONAL COMPONENT:

1. Engineering Topics: Engineering Science – 1.5 credits (50%)
   Engineering Design – 1.5 credits (50%)

RELATED ME PROGRAM OUTCOMES: N/A

NATURE OF DESIGN CONTENT: Use computer tools to design a comfortable, healthy, and safe building.

COMPUTER USAGE: Several building simulation programs.

COURSE STRUCTURE/SCHEDULE:

1. Lecture – 2 days per week at 75 minutes.

PREPARED BY: Q. Yan Chen

REVISION DATE: January 17, 2008