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APPROVAL COVER SHEET & PROPOSAL FORM FOR ☐ ORIGINAL

SPECIAL TOPIC COURSES

MISSISSIPPI STATE UNIVERSIY

NOTE: This form is a cover sheet that must accompany a proposal for inclusion as a Special Topic Course. Both the cover sheet and proposal should be submitted, along with two copies, to UCCC, 244 Magruder Street, 2nd Floor, Mail Stop 9699 (325-0831).

College or School: College of Agriculture & Life Sciences

Department: Agricultural and Biological Engineering

Contact Person: Jeremiah Davis **Phone:** 312-0114 **E-mail:** jdavis@abe.msstate.edu

Mail Stop: 9632 **Date Initiated:** 7/27/11 **Effective Date:** Aug 17th

Current Listing in Catalog:

Symbol	Number	Title	Credit Hours
ABE	8990	Design of Environmental Systems for Ag Structures	(3)

Approved: *Date:*

Jonathan Pote
Department Head — 7/27/2011

Walter Taylor for K. M. Harper
Dean of College or School — 8-01-2011

Special Topic Course Proposal:
Special Topics courses may be offered twice. If the department or faculty would like to continue to offer the course, a full course addition proposal must be developed and submitted for full approval (see the Guide & Format for instructions). Special Topics may be offered once through AOCE (campus 5).

Explain on this page your idea for a Special Topic Course to be taught during the Fall, Spring, or Summer semester (does not include Maymester). Complete Page 3 of the proposal to include the course title, credit hours, course content/topics, methods of evaluation, and grading scale. A copy of the course syllabus may also be attached; however, it does not replace this proposal form.

1. **Idea or Reasoning for a Special Topic Course:**

Title: ABE 8990 Design of Environmental Systems for Ag Structures

Course Description: Principles of animal environment. Insulation, ventilation, air distribution, heating and cooling equipment, and controls. Analysis of air quality. Research instrumentation.

Course Objectives:

1. Analyze dry air/water-vapor mixtures and air conditioning processes.
2. Analyze heat loss/gain from various building components.
3. Analyze conductive, convective, radiative, and evaporative heat loss.
4. Evaluate mass and energy balances of ventilated spaces.
5. Determine air-jet properties and the overall influence on air distribution.
6. Develop control strategies for controlling temperature, humidity, and air quality levels.

Text: Environment Control for Animals and Plants

Semester: To be taught in Fall 2011

Justification: We have several graduate students in the Biological Engineering major that are conducting research on environmental control and energy issues in poultry and livestock. We need a formal route to teach the fundamentals of environmental control to the interested students.

Instructors: Jeremiah Davis, Joseph Purswell (USDA ARS Poultry Research Unit)

Room: TBA

Time: T-Th 3:30 - 4:45

Student Capacity: 15

2. Course Information:

Symbol	Number	Title	Credit Hours
ABE	8990	Design of Environmental Systems for Ag Structures	(3)

Course Content/Topics (A minimum of 12 topics is required. Expand text box if needed)

1.Introduction Animal Needs
2. Psychometric Properties
3. Conduction Heat Transfer
4. Convective Heat Transfer
5. Radiation Heat Transfer
6. Thermal Analysis
7. Energy Balances
8. Mass Balances
9. Ventilation Rates
10. Air Inlets/Outlets
11. Air Distribution
12. Mechanical Ventilation Systems
13. Natural Ventilation Systems
14. Environmental Control Systems

Methods of Evaluation:

Project 1 - 20%
Project 2 - 20%
Project 3 - 20%
Project 4 - 20%
Project 5 - 20%

Total - 100%

Grading Scale: A = 90%, B = 80%, C = 70%